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THE STANFORD EXPEDITION TO BRAZIL, 1911, JOHN C. BRANNER, DIRECTOR. THE ANTS OF BRAZIL.

By William M. Mann.

With Seven Plates.

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No. 11.— *The Stanford Expedition to Brazil, 1911. John C. Branner, Director. The Ants of Brazil.*

CONTRIBUTIONS FROM THE ENTOMOLOGICAL LABORATORY OF THE BUSSEY INSTITUTION, HARVARD UNIVERSITY, No. 114.

BY WILLIAM M. MANN.

As Entomologist to the Stanford Expedition, it was my privilege to spend the summer and fall of 1911 making collections in various parts of Brazil. Natal and Ceará on the East Coast were our headquarters for the first three months, and from these stations side trips were made to nearby points. In the early part of July, when the other members of the party returned to the States, Dr. Fred Baker and I remained at Pará, and subsequently went up the Amazon to Manaos. We hoped to be able to get into the region of the upper Rio Madeira. Our hopes were more than realized, for Mr. May, senior member of the firm, May, Jeckyll & Randolph, then engaged in constructing the Madeira-Mamoré Railroad, took an active interest in our work and provided us with transportation from Manaos to Porto Velho on the little steamer owned by the company, and with letters to several of the engineers and medical men. From the time of our arrival at Porto Velho till we left, we were shown the greatest hospitality by everyone in the foreign colony. Dr. James Laidlow and Messrs. Nixon and Troop cared for us in their homes at Porto Velho, while along the line of the railroad and in the construction camps everyone gave us all possible assistance. Some of the men, as Messrs. H. N. Burton and Fry, themselves interested in insects, collected during spare hours and generously turned over to us such specimens as we wanted. It is impossible adequately to express our appreciation of the kindness with which we were treated while on the Madeira-Mamoré.

As a great deal of territory was covered, and several distinct faunal regions visited, it seems advisable to give a list of the localities in which collections were made. These are:

State of Rio Grande do Norte.

Natal. On the coast, in an arid, sandy and wind-swept district.

Ceará-Mirim. North of Natal. The immediate vicinity of the town is well cultivated, with fields of cane and cotton, and considerable woody land and abundant water.

Baixa Verde. The terminus of a little railroad running out of Natal in a northwesterly direction. The surrounding country is hilly and very arid, with much scrub and cacti. At the time we collected here everything was dry and collecting was to be had only beneath stones, with which the ground was strewn.

State of Parahyba.

Independencia. Dr. Heath and I spent a week at the little village of Itamatahy, near Independencia, as guests of Messrs. Nye and Tessire, engineers on the local railroad. The country is hilly, with abundant vegetation and water. Bamboo breaks afforded interesting collecting.

State of Ceará.

Ceará. On the coast in extremely arid surroundings. There is a good stream near the city, along which was a fairly abundant fauna. This and the following are type localities of many of the ants described by Mayr and Forel.

Baturité Mountains. Mr. Williams, the Director of the railroad between Ceará and Inixadá gave the members of the Expedition an excursion to the latter village. *En route* it was possible to collect at several points in the mountains.

Maranguapé Mountains. Mr. Lieb, Assistant Geologist of the Expedition, and the writer made a side trip into these mountains and collected for a day. In the humid canyons and on the hillsides were taken several species not found elsewhere.

State of Pará.

Pará. Nearly all of the material labeled Pará was taken in the forest on the outskirts of the suburb Souza.

Santarem. Visited on our return trip down the river. We were able to spend only a few hours here, chiefly among the scrub in the sandy region back of the town.

State of Amazonas.

Itacoatiara. On the north bank of the Amazon, about forty miles below the mouth of the Rio Madeira.

Porto Velho. The starting point of the Madeira-Mamoré Railroad, near the border of Matto Grosso, about three miles from the Brazilian village of São Antonio.

State of Matto Grosso.

Abuná. On the Brazilian side of the river, nearly opposite the mouth of the Rio Abuna which forms the boundary of Bolivia and the Brazilian State of Matto Grosso.

Madeira-Mamoré R. R. Camps. Collections were made at a number of construction and other camps along the line of the railroad. The numbers of the camps are given as data. The locality can be most exactly expressed by giving the distances in kilometers from Porto Velho. These are:

Camp No. 28	170 kms.
" " 39	284 "
" " 41	306 "
" " 43	325 "

My study of the collection of Formicidæ has been made possible through the aid of Prof. W. M. Wheeler who has constantly followed the course of my work and generously permitted me to use his extensive collections and library at all times.

I wish to thank Dr. J. C. Branner, through whom I was enabled to accompany the expedition, and Dr. Fred Baker, Dr. Harold Heath, Prof. E. C. Starks and Messrs. Olaf Jenkins, Earl Leib and George Branner, members of the Stanford Expedition, as well as Prof. Chas. T. Brues of the Bussey Institution, all of whom have assisted me in various ways.

Ponerinae.

1. *Acanthostichus brevicornis* Emery.

Three workers taken from beneath a deeply imbedded stone at Independencia, agree closely with Emery's description of *A. brevicornis* from Cayenne. The length varies from 3 to 6 mm. The head is considerably longer than broad, with straight, parallel sides. The

antennal scapes are short and broad. There was only a small number of workers together and all but three escaped.

2. *Paraponera clavata* (Fabricius).

Found commonly at Pará, Manaos, and along the Rio Madeira at Abuná, Porto Velho, and Camps 39 and 41. ☿ ♀.

Next to *Dinoponera grandis* Guérin, this is the largest of the Brazilian ants. It is much more widely distributed than *D. grandis*, occurring from Central America to Paraguay. In habit it is diurnal. The colonies are composed of a small number of individuals, which nest in the ground, generally among the roots of trees or shrubs.

3. *Platythyrea angusta* Forel.

A series of workers from Porto Velho, Abuná, and Madeira-Mamoré Camp 39 agrees well with the description, but have the anterior femora much swollen at the base. Dr. Forel recently showed me the type, which also has enlarged femora. This species, originally described from Trinidad, is more slender than the other South American forms, and the petiole is twice as long as broad. These characters, and the structure of the femora distinguish it from the others.

4. *Platythyrea incerta* Emery.

A single worker from Madeira-Mamoré Camp 41 agrees closely with Emery's description. It differs from *P. punctata* in being much larger (length 8 mm.) and in having the head shorter and the punctuation considerably coarser.

5. *Platythyrea meinerti* Forel.

Plate **1**, figs. 2, 3; Plate **7**, fig. 53.

A colony of this species was found at Pará in one part of a termite nest, a favorite nesting place of the genus, which is probably largely termitophagous in habit. This species is characterized by the strongly bisinuate petiolar node and the large eyes, which are as long as their distance from the anterior border of the head. A full-grown larva is shown Plate **7**, fig. 53.

The following table may help in separating the South American species of Platythyrea.

A. Mandibles dentate.
Length 8 mm. (Surinam).....*sinuata* Roger.
AA. Mandibles without teeth.
a. Eyes as long as their distance from anterior border of head; petiole strongly bisinuate, the middle portion prolonged into a short beak. Length 7.5 mm. (Venezuela, Brazil).....*meinerti* Forel.
aa. Eyes smaller, petiole feebly sinuate.
b. Petiole from above more than twice as long as broad, as long as first segment of gaster; femora swollen. Length 6.7 to 7.7 mm. (Trinidad, Brazil).....*angusta* Forel.
bb. Petiole from above less than twice as long as broad, femora normal.
c. Punctures on epinotum very coarse, dilatation of frontal lobes more marked. Length 8 mm. (Venezuela, Brazil). *incerta* Emery.
cc. Punctures on epinotum finer, dilatation of frontal lobes less marked. Length 6 to 7 mm. (Antilles, Central and South America).....*punctata* Smith.

6. *Typhlomyrmex rogenhoferi* Mayr.

One small colony, taken from a rotten log at Para. ♀.

7. *Rhopalopone relicta*, sp. nov.

Plate 1, fig. 4, 5.

Worker. (Plate 1, figs. 4, 5). Length 2.5 mm.

Head, excluding mandibles, distinctly longer than broad, broadest behind eyes, the width at occiput about equal to that at base of clypeus; sides slightly rounded, posterior border feebly concave. Mandibles long, rather slender, the blade minutely dentate; outer border arcuate at middle. Clypeus subtriangular, broadly rounded at anterior border, flattened in the middle. Frontal carinae very short, their basal lobes rounded. Antennae robust; scapes arcuate, extending barely to the occipital corners; first funicular joint as long as the two succeeding joints together; joints 3 to 9 broader than long; apical

joint twice as long as the penultimate. Eyes small, convex; situated at middle of sides of head. Prothorax slightly transverse, rounded dorsally and laterally. Promesonotal suture faintly impressed. Mesoëpinotal suture not discernable. Epinotum in profile slightly convex above; its base rounding into the declivity and equal to it in length. Petiole from above transverse, sides rounded; in profile deeper than thick, anterior surface nearly straight, the posterior concave; ventral surface with a large flat tooth anteriorly. Gaster about as long as the thorax and epinotum together; first and second segments subequal, the former with a large anteroventral tooth. Legs robust; posterior coxa armed with a large curved spine.

Sublucid. Head regularly, longitudinally striate and rugose. Thorax and epinotum shining, sparsely punctate, their pleurae coarsely striate transversely. Epinotal declivity transversely striate. Petiolar node with transverse rugæ. Gaster with coarse longitudinal striæ. Legs finely punctate and shining.

Head, antennae, body, and legs with fine short pilosity.

Color brownish red; legs, mandibles, and antennae brownish yellow. Pilosity white.

Described from several workers taken at Madeira-Mamoré Camp 39.

This distinct species is the first Rhopalopone to be recorded from America, the four other known species inhabiting Borneo and New Guinea.

8. *Holcoponera striatula* Mayr.

Very common in the vicinity of Natal, where it was nesting beneath stones and logs, in rather large colonies. One colony was found at Pará. ☿ ♀.

9. *Holcoponera mölleri* Forel.

A single worker from Madeira-Mamoré Camp 39 agrees with Forel's description of this species from Blumenau. It is larger than *H. striatula*, the mandibles are more coarsely striate and all the funicular joints are distinctly longer than broad. In its other characters it is very similar to *H. striatula*.

10. *Ectatomma (Ectatomma) quadridens* (Fabricius).

Plate 7, fig. 54.

This species was very common at Independencia, Ceará-Mirim, Pará, Itacoatiara, and Manaos. In a nest excavated at the first named locality, the brood chambers were about two and a half feet beneath the surface, in very hard dry earth. Although *E. quadridens* is very common in collections, the male appears to be undescribed.

Male. Length 10 mm.

Head, excluding mandibles, as broad as long, with rounded occipital border. Cheeks two thirds as long as eye. Mandibles well developed, shaped like those of the worker, but smaller. Eyes and ocelli large and convex. Antennae slender, the scape thick and short, about half as long as eye; first joint of the funiculus one third as long as the scape, joints 3–12 cylindrical, four to five times as long as broad; apical joint one and a third times the length of penultimate. Pro- and mesothorax rounded above and at sides. Epinotum rounded; the declivous surface broad and flat, feebly marginate at base, with small lamellate tubercles. Node rounded, transverse, its height about equal to its length; anterior surface flat; with a tubercle anteroventrally.

Head and thorax opaque, rugulosely striate. Mandibles coarsely striate. Antennae finely punctate. Node and first two segments of gaster subopaque, the latter densely striolate longitudinally.

First four joints of antennae sparsely, the rest thickly pubescent, with a few short, erect hairs. Head and thorax with pubescence and a few erect hairs. Node devoid of pubescence, but pilose. Gaster sparsely pubescent and abundantly pilose. Legs finely pilose.

Color black; genitalia brown. Wings (length 6.5 mm.) infuscated; veins and stigma fuscous.

The larva is shown Plate 7, fig. 54.

11. *Ectatomma (Ectatomma) ruidum* (Roger).

Less abundant than the preceding species. Found at Ceará-Mirim, Manaos, and Camps 39 and 41 Madeira-Mamoré RR. ☿.

12. *Ectatomma (Ectatomma) tuberculatum* (Olivier).

Common at Pará, Itacoatiara, Manaos, and along the Rio Madeira. ☿ ♀.

Workers are often seen moving slowly about or remaining motionless on the stems and leaves of trees and shrubs. The species is partly nocturnal in habit and often enters houses and hunts about for other insects that come to the lights. A nest which I dug out was in the ground among the roots of a plant, about twelve inches below the surface.

13. *Ectatomma* (*Ectatomma*) *confine* Mayr.

Plate 1, fig. 8.

A single worker (Plate 1, fig. 8), which agrees well with Mayr's description, was taken at Porto Velho. Apparently the species has not been recorded since Mayr described it from a Colombian specimen.

The structure of the pronotum is very characteristic. The middle tubercle is prolonged and flattened above, and laterally compressed in front of the pleural spines so that it has the form of a short, thick carina. The lateral spines on the pronotum are short, flattened, and triangular; the epinotal spines are prominent. The sculpture of the head is coarse, that of the rest of the body delicate. The head, thorax, and abdomen are sparsely beset with coarse, erect hairs.

14. *Ectatomma* (*Gnamptogenys*) *concinnum* (F. Smith).

Plate 1, fig. 7.

Workers (Plate 1, fig. 7) were found at Porto Velho, Abuná, and Madeira-Mamoré Camp 39.

15. *Ectatomma* (*Gnamptogenys*) *tortuolosum* F. Smith.

Plate 1, fig. 6.

Worker. (Plate 1, fig. 6.) Length 7 mm.

Head, excluding mandibles, a little longer than broad, with slightly convex sides, narrowly rounded posterior corners and concave border. Clypeus nearly as long as broad, the surface depressed; anterior border straight. Mandibles slender, the blade edentate. Antennae robust; scape thickened apically, extending one fourth its length beyond the occipital corners; funicular joints 1 to 3 elongate, subequal; joints 3–6 globose, a little longer than broad. Eyes moderately large, convex, situated at middle of sides of head. Thorax

above without sutures. Prothorax rounded above in front and at sides. Epinotum in profile nearly straight at base, the declivity sloping gradually. Petiole longer than broad, broadest behind, with rounded posterior border, straight sides and straight, margined anterior border, the corners of which project angulately; in profile higher than long, rounded above. Gaster short and thick. Legs rather slender.

Head shining, longitudinally striate, the striae coarse and regular, becoming oblique at sides, perpendicular on cheeks; the intervening ridges rounded. Thorax shining, sculptured similarly to head; the prothoracic striae longitudinal at middle, arcuate at sides, forming a somewhat concentric pattern. Striae of epinotum transverse at middle, obliquely longitudinal at sides. Petiole concentrically striate. Gaster subshining, the first two segments longitudinally striate.

Head, body, and legs with abundant, rather fine erect hairs.

Color piceous, legs and antennae fuscous.

The specimen before me has the antennae mutilated.

Described from a worker found dead, at Madeira-Mamoré Camp 41. The specimen runs to *E. tortuolosum* in Emery's key to the species, and answers to Smith's very superficial description, but differs from the form considered as this species by Emery (Studi sulle formiche della fauna Neotropica. Bull. Soc. ent. Ital., 1896, **28**, p. 51) in the structure of the petiole, which forms an acute angle above in profile in *E. tortuolosum*. It is doubtful whether this or Emery's specimen (which came from Pará) belongs to Smith's species.

16. *Ectatomma* (*Gnamptogenys*) *sulcatum* (F. Smith).

Several workers and females from Porto Velho. The striae extend the entire length of the thorax; those of the node and first gastric segment are also longitudinal, but slightly arcuate on the sides. The color is bright ferruginous, with the head black and the mandibles pale yellow.

17. *Ectatomma* (*Gnamptogenys*) *sulcatum* var. *nitens*, var. nov.

Three workers from Manaos and Independencia.

In form and sculpture this variety is identical with the typical form, but is entirely black in color, except the mandibles which are yellow.

18. *Ectatomma* (*Gnamptogenys*) *annulatum* Mayr.

Not uncommon at Porto Velho, and Camp 39, Madeira-Mamoré R. R., where several females and workers were taken. Two workers from Pará are also in the collection. A nest was found in a cavity of a fence post, where the wood was rotten.

The striolation of *E. annulatum* is very delicate, longitudinal on the pro- and mesonotum, transverse on the epinotum and petiolar node. The specimens vary in color from fuscous to ferruginous. The legs of all are yellowish brown, with a fuscous blotch at apex of tibiae and femora.

19. *Dinoponera grandis* (Guérin).

Several specimens of the typical form of the species, as designated by Emery (Ann. Soc. ent. Belg., 1901, **45**, p. 47) were taken at Pará, in the suburb Souza. The subopaque gaster, abundance of hairs on the body and the well-developed ventral tooth of the pronotum, are characteristic of this form. The petiole in profile is quadrangular, as high behind as in front, and the thorax and gaster bear fine recumbent pubescence, which gives a brownish appearance to the body.

20. *Dinoponera grandis* subsp. *lucida* Emery.

Two workers from Porto Velho.

This subspecies differs from the typical *D. grandis* in having the prothorax, node, and gaster shining; the petiole from above is more slender and in profile has the upper surface convex instead of nearly straight; the prothoracic spine is lacking; the pubescence of the thorax is more dense.

21. *Dinoponera grandis* subsp. *mutica* Emery.

Plate **7**, fig. 55.

Abundant at Natal, Baixa-Verdé, Ceará-Mirim, and Independencia. The prothoracic spine is absent; the node shorter than in the typical *D. grandis*, in profile pointed in front, rounded behind. The body is more shining, the pilosity and pubescence less conspicuous.

There were several colonies of *D. mutica* in the vicinity of our house

at Natal, nesting among scrubby vegetation. The typical *D. grandis*, in the forest, is seen foraging all through the day, but *D. mutica*, living in more open localities, is crepuscular or nocturnal, though it forages also on cloudy days. The formicaries were always in thickets, among the roots of trees. The mounds thrown up are low, generally not over six inches in height, and often up to three feet in diameter. Dr. Heath and I dug out one nest. The tunnels extended along the underside of roots, which formed projecting roofs. Along these tunnels were frequent broad and flat chambers, which contained the brood. In spite of the large size and powerful sting, the ants were not very pugnacious, though those in a chamber would sally out when it was cut into.

Dinoponera grandis and its varieties are known to the Brazilians as the "Tocandero," and according to them its sting causes fever.

A larva (Plate 7, fig. 55) probably immature, in alcohol measures 13 mm. in length. The body is thick and the neck short. All the segments are distinct, with fine, short hairs. The head is glabrous, from above a little broader than long; the mandibles long and acuminate. The thorax and abdomen are tuberculate, the tubercles very large and prominent, rounded above, each bearing a small sensory papilla at the middle. Each segment has three of these large tubercles laterally, and a smaller, less conspicuous one basally.

22. *Dinoponera grandis* var. or subsp.

Male. Length 21 mm.

Head, including the mandibles, as broad as long, very convex behind. Eyes very large and long occupying the entire sides of head, the inner border deeply emarginate; ocelli very large and convex. Clypeus convex, the anterior border truncate. Mandibles small, pointed at apex, with a small tooth at middle of inner border. Antennae a little shorter than the body; first funicular joint twice as broad as long; joints 2–11 very long, cylindrical, each slightly shorter and more slender than the preceding. Thorax robust; scutellum short, triangular, broadly rounded at apex. Epinotum evenly rounded, without distinct base or declivity, unarmed. Petiole nearly twice as long as broad, narrowed in front, with nearly straight sides; in profile longer than high, flattened above, the anterior slope gradual, more abruptly sloping behind, the anteroventral surface with a broad, triangular projection. Gaster long, and slender, the length three

times the breadth. Genitalia prominent; the valves broad, rounded at apex; cerci long and slender. Wings large, extending almost to tip of gaster. Legs very long and slender.

Body and legs shining. Antennae opaque, coarsely, densely punctured; sparsely pubescent, and having much very long, fine erect hairs, which on the apical joints are shorter and confined to the tips; pubescence of apical joint more dense than the rest. Thorax with long silky pubescence, most abundant on the pleurae, and very fine erect hairs sparsely distributed. Node without pubescence, but with abundant erect hairs. Gaster with a thin mat of silky pubescence, shorter and finer than that of the thorax; lateral and apical portions with fine erect hairs.

Color rufous, the antennal scape and first five funicular joints fuscous. Wings slightly infuscated, veins and stigma reddish brown. Pile and pubescence yellowish white, except the long antennal hairs which are black.

Described from three examples, which were taken at lights in Independencia. This form which is probably the male of the variety *D. mutica*, the commoner form in this vicinity, is very much like a male thynnid in general habitus. The antennae bear unusually long hairs, which are abundant basally, but thin out and become shorter toward the apex.

23. *Neoponera* (*Neoponera*) *commutata* (Roger).

Porto Velho and Camp 39, Madeira-Mamoré R. R.

24. *Neoponera* (*Neoponera*) *apicalis* (Latreille).

Pará, Porto Velho, Abuná, and Camps 39, 41, Madeira-Mamoré R. R.

25. *Neoponera* (*Neoponera*) *obscuricornis* Emery.

Abuná and Porto Velho. ♀

In general appearance this species is very similar to the preceding. It can be distinguished by the structure of the node. In *N. apicalis* this is sharply margined at the sides, and longitudinally impressed medially to the margin. *Neoponera obscuricornis* has the surface of the node slightly convex, not impressed; the margin is very feeble at the base and entirely obsolete on the apical half.

26. *Neoponera (Neoponera) latreillei* Forel.

Pará, Porto Velho, and Camps 39, 41, Madeira-Mamoré R. R. ☿

The large size and active movements, with the contrast in color between the black body and yellow tipped antennae make *N. latreillei* one of the most conspicuous ants in the forest.

A small colony, of perhaps thirty individuals, found at Pará, was nesting beneath a banana stalk in a dense thicket. The ants were very timid and ran away quickly, but returned one by one to carry off their brood.

27. *Neoponera (Neoponera) unidentata* (Mayr).

Pará, Manaos, Porto Velho, and Camps 39, 41 Madeira-Mamoré R. R. ☿ ♀

28. *Neoponera (Neoponera) bakeri*, sp. nov.

Plate 1, fig. 9.

Worker. (Plate 1, fig. 9). Length 8 mm. Near *N. unidentata* (Mayr). Head, excluding mandibles, longer than broad, subquadrate, sides feebly convex, posterior angles obtuse; occiput concave; carina on cheek strong; clypeus at middle prolonged into a sharp point, concave at sides. Mandibles rather thick, triangular, with twelve small teeth, the apical and two subapical larger than the others and subequal. Eyes convex, a little in front of the middle of head. Antennal scapes extending three eighths their length beyond the occipital corners; apical joint of flagellum nearly twice as long as penultimate. Thorax, seen in profile, moderately convex. Pronotum convex, strongly margined at sides, the margin indistinctly serrate. Mesonotum nearly circular, disc-like. Mesoëpinotal impression shallow, but distinct. Metanotum convex basally; declivity gradual, the surface nearly flat, on either side with a prominent marginal carina on which are three distinct triangular teeth. Node highest in front; anterior surface straight to apex; posterior surface, seen in profile, strongly convex, base slightly concave, margined at sides, margin with three to five distinct teeth. Gaster as long as thorax and head excluding mandibles.

Head coarsely, longitudinally striate, the striae irregular and wavy; mandibles sublucid, smooth. Pronotum more finely transversely striate. Striae of meso- and epinotum coarse, on mesonotum

and disc of epinotum transverse, on sides longitudinally oblique. Node shining, with coarse, transverse striae, which extend around it, broken only by the strong margin. Gaster sublucid; first segment minutely punctate.

Head and thorax with fine recumbent pubescence, and abundant, scattered, erect pile. Node without pubescence, and with scarce pilosity. Gaster with a dense mat of fine recumbent pubescence, and abundant, scattered, erect pile.

Femora and tibiae with short erect hairs, smooth and shining.

Color black; mandibles, antennae, tibiae, and tarsi brown, femora yellow. Pile and pubescence pale yellow.

Female. Length 11 mm.

Similar to worker. The eyes are small, ocelli minute. The thoracic striae are proportionately much finer than in the worker, and transverse. The declivity of the epinotum is abrupt, the base shallowly margined; margin with fine teeth. Node as in worker.

Pile and pubescence as in worker. Color black; legs, mandibles, and extreme tip of antennae brown.

Wings. Length 7.5 mm. Infuscated, veins and stigma fuscous.

Described from one female from Porto Velho and several workers taken on the Rio Madeira at Porto Velho, and Camps 39 and 41 on the Madeira-Mamoré R. R. This species in form is similar to *N. unidentata* (Mayr), which was common in the same region, but the very distinctive coarse sculpture of the head, thorax, and especially of the node, and the denticulate margins of the epinotal declivity and the posterior surface of the node, as well as the different nodal structure seem to constitute differences more than subspecific.

29. *Neoponera (Neoponera) villosa* (Fabricius).

Pará, Manaos, Itacoatiara, Porto Velho, Abuná, and Camps 39, 41 Madeira-Mamoré R. R., Brazil; and Abuná, Bolivia.

This is one of the commonest ponerine ants of Brazil, and one of the most widely distributed species, ranging from Texas to Paraguay.

30. *Neoponera (Neoponera) carinulata* (Roger).

Plate 1, fig. 10.

Worker. (Plate 1, fig. 10). Length 8 mm.

Head, excluding mandibles, scarcely longer than broad, very slightly narrowed in front; occipital border nearly straight; sides feebly

convex; clypeus prolonged at middle, the apical portion narrowly rounded; frontal carinae above antennal lobes slightly diverging outwardly. Mandibles triangular; about $\frac{5}{8}$ as long as head, the blade with twelve distinct teeth. Carinae on cheeks very distinct. Antennae slender; the scapes extending one third their length past occipital corners; funicular joints all longer than broad, increasing in size toward the tip. Prothorax transverse, longitudinally carinate at middle, flattened above; sides strongly margined, in profile slightly convex. Mesonotum circular, with a median, longitudinal carina, on either side of which the surface is depressed; in profile flat. Epinotum in profile evenly convex, with no appreciable angle between base and declivity; anterior portion rounded above and at sides; declivity margined, with an indistinct tubercle at middle of margin; surface flat. Petiole as broad as long, broadest behind, sides evenly convex; posterior margin straight, in profile three fourths as thick as high, with anterior surface horizontal from base to two thirds the distance to apex, then inclined to apex; posterior surface with a disc at middle, rounded on the sides. Gaster cylindrical, as long as thorax and petiole together.

Somewhat shining. Mandibles finely striate. Head foveolately punctate; thorax and node finely punctate, the epinotal pleurae striolate.

Head, thorax, and node with sparse, fine, appressed pubescence and scattered, erect hairs. Posterior surface of node smooth and shining. Gaster rather densely pubescent and with scattered, long pile. Legs sparsely pubescent and pilose.

Color black; antennae, mandibles, and legs brown. Pile and pubescence silvery.

Described from two workers taken at Abuná.

31. *Neoponera* (*Neoponera*) *crenata* Roger subsp. *moesta* Mayr.

One colony was found at Porto Velho.

32. *Neoponera* (*Neoponera*) *stipitum* Forel.

A single worker from Camp 41, Madeira-Mamoré R. R. agrees very well with a cotype from Colombia in the Wheeler collection.

33. *Neoponera (Neoponera) cavinodis*, sp. nov.

Plate 2, fig. 14.

Worker. (Plate 2, fig. 14). Length 10 mm.

Near *N. luteola* (Roger). Head, excluding mandibles, longer than broad; sides convex, base slightly concave, posterior angles rounded; clypeus extended at middle into a triangular projection, the sides arcuately impressed. Mandibles elongate, acute at apex, with twelve teeth, the basal of which are small and those apically larger; the apical tooth is long and pointed, attached at base to this is a smaller sharp tooth, about half as long, and basal to this another, slightly longer and more acute than the subapical. Eyes convex, situated a little in front of middle of head. Scape of antenna extending three eighths its length past occiput; joints 1–10 of flagellum subequal in length, gradually thicker towards the apex; apical joint $1\frac{1}{2}$ times length of penultimate. Pronotum slightly convex, sides feebly margined, forming an angle with the nearly flat pleurae; disc at middle with a shallow, but distinct longitudinal impression. Mesoëpinotum in profile very slightly convex, rounded at sides posteriorly, and in back, the mesoëpinotal suture scarcely distinguishable: declivity of epinotum rather flat, with feeble margin at sides; above forming a rounded angle with the basal portion; seen from behind spear-shaped, the apex with a short longitudinal impression. Petiole higher than thorax, anterior surface evenly rounded to apex, the middle of base very slightly convex; apex projecting backward over the posterior surface; posterior surface receding anteriorly, concave above, slightly convex below. Gaster as long as head and thorax.

Mandibles subshining, with scattered, coarse punctures. Head subopaque, very finely transversely striate and with minute punctures. Thorax and anterior surface of petiolar node sublucid, finely punctate and delicately reticulate. Gaster finely punctate. Legs shining. Head and thorax with fine pubescence and long scattered pile. Clypeus with several long hairs. Anterior surface of node with appressed pubescence, the posterior surface glabrous. Gaster thickly pubescent and with long scattered hairs. Femora and tibiae with suberect hairs.

Color brown, head and gaster darker than the thorax. Legs yellow. Pile and pubescence pale yellow.

Described from a worker taken at Porto Velho.

In general appearance *N. cavinodis* resembles *N. crenata* but is much larger and the node is entirely different.

34. *Pachycondyla crassinoda* (Latreille).

Taken at Pará, Porto Velho, and Madeira-Mamoré Camp 39.

35. *Pachycondyla harpax* (Fabricius).

Common at Pará Manaos, Porto Velho, Abuná, and Camp 41, Madeira-Mamoré, R. R.

36. *Euponera (Trachymesopus) stigma* (Fabricius).

This species, which is common everywhere in the American tropics is represented in the collection by workers and females from Pará, Itacoatiara, Manaos, Porto Velho, Abuná, and Camps 39 and 41, Madeira-Mamoré R. R. Rotten logs and beneath bark are its favorite nesting places.

37. *Belonopelta jeckylli*, sp. nov.

Plate **2**, fig. 12, 13.

Worker. (Plate **2**, fig. 12, 13). Length 4.5 mm.

Head very thick dorsoventrally; excluding mandibles, a little longer than broad, broadest anteriorly, with straight sides, narrowly rounded occipital corners and feebly concave occipital border. Clypeus convex; at anterior border armed with a stout spine at middle. Mandibles five eighths as long as head, slender, bidentate at apex; the inner border with a large tooth at middle, and a minute one midway between this and the subapical tooth. Antennae robust; the scapes slightly arcuate, thickened distally, almost attaining occipital corners. First funicular joint longer than broad, joints 2–10 slightly transverse, those at the apical end subglobose; apical joint as long as the three preceding together, evenly narrowed from base to apex. Eyes minute, situated at anterior third of sides of head. Prothorax with a thick neck. Pronotum from above, excluding the neck, a little broader than long, rounded in front and at sides, the posterior border concave. Promesonotal suture very strongly impressed. Mesonotum about half the width of pronotum, rounded in front, sides nearly straight, in profile slightly convex. Mesoëpinotal suture feebly impressed. Epinotum twice as long as the mesonotum, and a

little broader, broadest behind, sides nearly straight; in profile gradually elevated from base to angle of declivity; declivity half as long as the basal part, with the surface flattened. Petiole from above very little broader than long, anterior margin straight, at corners of base with prominent lamellate projections, that appear as spines from above; sides rounded, posterior border feebly rounded; in profile deeper than thick, with nearly straight anterior and posterior surfaces, slightly convex above. Gaster cylindrical, strongly narrowed toward apex; the first segment noticeably broader than the second and equal to it in length; a distinct ventral spine present at base. Sting comparatively large. Legs very slender.

Head, thorax, and petiole subopaque, closely, foveolately punctate throughout; pleurae of pro- and mesothorax and anterior coxa obliquely rugulosely striolate; collar transversely rugulose-striolate. Mandibles shining, finely punctate. Antennae and legs subshining, finely punctate. Gaster shining, minutely punctate.

Body, legs, antennae, and mandibles with semierect pilosity.

Head, mandibles, thorax, and petiole fuscous to piceous; borders of the frontal lobes, a round spot on the pronotum, the gaster and legs red. The borders of the gastric segments are infuscated.

Described from several specimens taken at Camp 39, Madeira-Mamoré R. R. The colony was discovered quite accidentally by scratching away some of the leaves and debris with which the ground in the forest is always covered. As far as I could ascertain the ants were traveling in a definite direction. Some of those before me are red in color, evidently immature. Nothing seems to be known regarding the habits of the species of this interesting genus, specimens of which are rare in collections. The four known species have each been found only once.

38. *Ponera trigona* Mayr.

One small colony was found at Manaos.

39. *Ponera opaciceps* Mayr.

Several colonies were taken at Ceará-Mirim.

40. *Ponera distinguenda* Emery.

Numerous workers were taken at Camp 39, Madeira-Mamoré R. R.

41. *Anochetus* (*Anochetus*) *mayri* Emery.

A single worker of this widely distributed species was taken at Baixa Verde.

42. *Anochetus* (*Anochetus*) *bispinosus* (F. Smith).

Plate 1, fig. 11.

Worker. (Plate 1, fig. 11). Length 8 mm.

Head, excluding mandibles a little longer than broad; broadest at eyes; occipital border deeply excised; sides above eyes concave, below sinuate, with the lower surface flattened. Eyes large, and convex. Clypeus between frontal lobes triangular, the surface flat, anterior portion bilobed; border concave at middle. Frontal carinae short. Mandibles about two thirds as long as head, narrow at base, broad and flat anteriorly, the blade edentate to near apex, where there is a short, thick tooth; apex with two long teeth, between which is a smaller, acute tooth. Antennae slender, the scape curved, thickened at middle, extending one eighth its length beyond the occipital corners; funicular joints long and slender, 1 to 10 subequal, apical joint nearly twice the length of subapical. Prothorax much narrowed in front, rounded above and at sides, the posterior border slightly concave. Promesothoracic suture deeply impressed; mesothorax transverse, rounded above and at sides. Mesoëpinotal impression deep and broad; epinotum much narrower than prothorax, straight at sides and above to the declivity, which is very short, and concave; angle with a pair of short, acute, erect spines. Node triangular, the apex with a pair of strong spines, between these broadly concave. Gaster short and thick, the first segment with a small ventral tooth. Sting long and powerful. Legs long and slender.

Head in front subshining, with dense striolae, which extend upward and outward from the frontal area; the remainder of head and the mandibles smooth and very shining. Antennae sublucid, finely pubescent. Thorax shining, rugosely punctate; the mesothoracic pleurae smooth. Node shining, transversely rugose in front, smooth behind. Legs and gaster shining, finely punctate.

Head in front with sparse pubescence, and a few erect hairs. Prothorax, gaster, and coxae with very sparse erect gray hairs. Femora and tibiae thinly pubescent.

Color black, the mandibles, posterior corners of head, and the nodal

spines brownish; legs and tip of gaster ferruginous. Pubescence white.

Described from a single worker taken at Porto Velho. The specimen on which Smith based his description was from Ega (Bates), so it is probable that the species extends over much of the Amazonian region.

43. *Anochetus* (*Stenomyrmex*) *emarginatus* (Fabricius) subsp. *rugosus* Emery.

Male. Length 7 mm.

Head, excluding eyes, considerably longer than broad, rounded behind. Eyes very large, each three fourths as broad as the distance between them, convex, as long as sides of head. Ocelli very large and convex. Mandibles, short, feeble, straight, and without teeth. Clypeus truncate at anterior border; surface broadly foveolately depressed at sides. Antennae very long and slender; the first joint twice as long as the second; joints 3–11 cylindrical, subequal, very long. Thorax narrower than head. Promesonotum convex above. Epinotum in profile evenly rounded. Node longer than broad, in profile triangular, much longer than thick. Gaster long and slender, without a distinct constriction between the first and second segments. Legs long and slender.

Body shining throughout, smooth, with extremely fine semierect pilosity, which is thickest on the antennae. Head and mandibles with a few coarser hairs.

Color light testaceous; antennae, excepting first joint, fuscous; eyes black. Pilosity white.

Described from several specimens taken at Manaos, from colonies which were nesting beneath the bases of living palm-tree leaves. Other colonies were found at Porto Velho beneath logs. The male is very active and takes flight readily.

44. *Odontomachus affinis* Guérin subsp. *mayi* Mann.

The single colony of this form was found living in parabiotic relations with *Dolichoderus debilis* Emery var. *rufescens* Mann, an account of which has already been published.

45. *Odontomachus haematoda* (Linné).

Pará, Manaos, Porto Velho, and Camp 41, Madeira-Mamoré R. R.

46. *Odontomachus haematoda* subsp. *pubescens* Roger.

Very common at Ceará, in the Maranguapé Mts., Independencia, Natal, and Ceará-Mirim. This form is distinguished from the typical *O. haematoda* by the more abundant pile and pubescence, and by the coarser sculpture of the node, which is only feebly striate in the latter form.

47. *Odontomachus haematoda* subsp. *laticeps* Roger.

Porto Velho and Camp 41, Madeira-Mamoré R. R.
This was much rarer than the above mentioned forms.

Dorylinae.

48. *Eciton* (*Eciton*) *hamatum* (Fabricius).

This species, which ranges from Mexico through Central America and over all of tropical South America, was very abundant in the region of the upper Rio Madeira. The armies, found in the woods almost every day, contained enormous numbers of individuals, mostly minors and mediae. One of the big-headed soldiers was encountered at intervals of from ten to twenty feet in the procession. This form is a very conspicuous object on account of its large, light-colored head and the long mandibles which necessitate the body being held high.

The march of the army is exceedingly rapid, and at times very definite in direction. Often it divides and sends some branches up into the tallest trees, while others cross and recross the trails. If an object such as a grub, lizard, or small snake be thrown near the column, it is almost instantly covered with the workers, which bite and sting severely. Unlike some of the other species, *E. hamatum* marches in the daytime and the column travels beneath or over the leaves, over logs, and along the trails. The trunks of fallen trees are a favorite runway. Other species of ants seem to be the usual prey of *E. hamatum*, for larvae and pupae of these made up the greater part of the booty carried by the workers. I observed on several occasions columns descending trees bringing numbers of larvae, pupae, and even adults of *Dolichoderus lugens* Emery, an ant which secretes from the anal glands a large drop of yellow liquid, apparently for defense.

In spite of its large size and the number of individuals in a column, *E. hamatum* is a timid species in comparison with some of the others, such as *E. vagans*. When the column was disturbed by my picking

up some of the individuals, those nearest would turn about and run back, zig-zagging from one ant to another, apparently missing none. An instantaneous antennal communication took place, the warned ant turned also, and almost instantly the whole army was retracing its steps as rapidly as it had come. In a few moments some few would return and then more and in a short time the army would resume its march. At other times a new path was followed. This antennal communication and quick change of direction was observed also in *E. pilosum*, *E. crassicorne*, and *E. burchelli*.

49. *Eciton (Eciton) lucanoides* Emery.

Columns were found at Madeira-Mamoré Camps 39 and 41.

This species was originally described from Peru. The mandibles are armed with a strong spine on the inner side, a little in front of the middle. I am unable to distinguish the minors and mediae of *E. lucanoides* from those of *E. hamatum* by any single character.

50. *Eciton (Eciton) burchelli* (Westwood).

This species was moderately abundant on the Rio Madeira, where it was encountered several times at Abuná and at Camp 41, Madeira-Mamoré R. R.

It is rather more aggressive than the other species. When disturbed it attacks the intruder very fiercely and persistently. The pain produced by the sting is severe, but of short duration.

51. *Eciton (Eciton) rapax* F. Smith.

Two small files of this beautiful species were found at Porto Velho and Camp 41, Madeira-Mamoré R. R. These were running along beneath the loose covering of leaves on the ground.

The ants were very timid and the file dispersed as soon as it was disturbed.

52. *Eciton (Eciton) rogeri* Dalla Torre.

Several colonies were taken at Camp 39, Madeira-Mamoré R. R.

53. *Eciton (Eciton) vagans* (Olivier).

Found at Independencia and Baixa Verde, where files were frequently seen toward evening.

54. *Eciton (Labidus) coecum* (Latreille).

Ceará, Baturité Mts., Natal, Independencia, and Pará, Brazil and at Abuná, Bolivia. This is the most widely distributed and one of the commonest species. It is subterranean in habit, and often found beneath deeply embedded stones and logs. The specimens from Abuná were taken from beneath the putrid carcass of a sheep, and most of the individuals were dead or nearly so, possibly having been overcome by the gases of decomposition.

55. *Eciton (Labidus) praedator* F. Smith.

Common along the upper Rio Madeira, where it was taken at Porto Velho and Camps 28 and 39 Madeira-Mamoré R. R. One army was seen emerging from the commissary building at the first named station, carrying with it an incredible number of insects, mostly cockroaches. Houses along the railroad were frequently raided at night by *E. prædator*, which is well known to the Brazilians and called by them "cazadoro" (hunter). I had the opportunity of observing one hut while the ants were in possession. The ground was covered with the ants, which swarmed also in the cracks and on the few pieces of furniture, while the owner of the place, a Barbados negress, not accustomed to such intrusions, stood for safety in a puddle of soapy water with which she had attempted to drive the ants away, and begged me to tell her what to do to get rid of them.

56. *Eciton (Labidus) praedator* subsp. *emiliae*, subsp. nov.

Worker. Differing from the typical form in having the head and body largely opaque; the head more densely punctulate; the thorax and petiole with very few hairs. The pilosity of the gaster is much shorter and the pubescence is more dense; the color is reddish brown, becoming darker on the head.

A large series of this new subspecies was sent to me by Dr. Emilia Snethlage, who collected it at Colonia de Veado, near Obidos. Possibly this is the var. *ferruginea* Norton, which was described from Mexico, but has not been recognized since.

57. *Eciton* (*Labidus*) *crassicorne* F. Smith.

Common at Ceará-Mirim and at Carnahubinha (near Natal) where armies were frequently seen toward evening, either on the ground or in the nests of ground-inhabiting ants.

58. *Eciton* (*Labidus*) *esenbecki* (Westwood).

A single male of this species was taken at light at Porto Velho.

59. *Eciton* (*Labidus*) *sulcatum* (Mayr).

Several males were taken at light at Independencia.

60. *Eciton* (*Acamatus*) *nitens* Mayr.

A rather large colony of this distinct species, was found emerging at dusk from beneath our house at Independencia.

61. *Eciton* (*Acamatus*) *pilosum* F. Smith.

Taken at Independencia and Pará. Several armies were encountered. I collected a number of specimens from a large column which was crossing a railroad track at Independencia, whereupon the column broke up, but formed again and continued its march, this time beneath the rail. A column found in the woods at Pará was travelling underground, except where it crossed a path. Here it emerged and constructed a trail with embankments on each side.

62. *Eciton* (*Acamatus*) *legionis* F. Smith subsp. *crenulatum*, subsp. nov.

Plate 1, fig. 1.

Worker. (Plate 1, fig. 1). Length 3.5 to 5 mm.

Head, excluding mandibles, longer than broad, with nearly straight sides and rounded border; posterior corners angulate. Frontal carinae nearly straight. Outer border of antennal pits strongly carinate. Anterior margin of clypeus flat, projecting at middle. Mandibles stout; the blade edentate. Antennae robust; scape extending a third its length beyond the occipital corners, constricted

near apex, then incrassate; funicular joints a little longer than broad. Eyes distinct, convex. Pronotum twice as long as broad, flat above, the lateral borders elevated into a rounded ridge, which is somewhat thickened at middle. Mesonotum separated from pronotum by a transverse ridge, elevated, concave at middle, strongly margined at sides; mesial to the margin is a longitudinal furrow and on the upper surface two parallel ridges. Base and declivity of epinotum subequal in length, the former flat above with margined sides; surface of the latter evenly convex. Petiole from above longer than broad; flat above, with straight, roundly margined sides. Postpetiole a little longer than broad, broadest behind, rounded above and at sides, anteroventral surface with a distinct tooth.

Head, antennae, thorax, and epinotum sublucid; coarsely, granulosely punctate, throughout, except for a rounded area mesial to the eye, which is finely punctate. Antennae, mandibles, petiole, postpetiole, and legs more shallowly punctate. Gaster smooth and shining.

Head, body, antennae, and legs with long erect hairs; funiculus pubescent.

Color black, antennae, and legs dark reddish brown. Pilosity yellow.

Described from several workers taken from a file that was running beneath the loose bark of a felled tree at Madeira-Mamoré Camp No. 39. This is a very distinct form because of its peculiar sculpture and the strong carinae on the thorax. The latter, especially those at the middle of the mesothorax, are interrupted so that in profile they appear as tubercles.

Myrmicinae.

63. *Pseudomyrma arboris-sancti* Emery.

Plate 3, fig. 21.

This species is widely distributed in northern South America, and many observations have been made on its relations to the trees of the genus Triplaris with which it appears to be always associated. The tree is well known to the Brazilians and Bolivians by the name of "palo santo," and the ant is called the "taschi." I was told that no living tree was ever without the ants and that the ants never nested elsewhere than in this plant. At Madeira-Mamoré Camp 43 Triplaris was fairly common in the woods and I examined some

dozens, always finding the ant. The colonies contain an enormous number of individuals living throughout the whole plant, all parts of which are hollow. The workers are very aggressive and their sting is quite severe. Whether or not the ants derive any advantage from the tree other than a convenient place to nest I do not know, but there is no doubt that they protect the plant from almost any possible enemy. A Swiss rubber explorer, Otto Schmidt, who has spent many years in the forest and is a keen observer, told me that dead Triplaris plants never contain ant colonies. This suggests that the living plants do offer some attraction to the ant, other than shelter.

64. *Pseudomyrma oculata* F. Smith.

Many workers and females were found at Natal, nesting in hollow twigs. This is one of the smaller, more delicate species, the workers measuring 4 mm. in length. The head is two and a half times as long as broad, the sides parallel with large, flat eyes. The antennal scapes are short, extending only to anterior third of eyes. The petiole is flattened above, twice as long as broad, in profile nearly twice as long as thick. The color is dark fuscous throughout.

65. *Pseudomyrma caroli* Forel.

Many colonies were found at Itacoatiara, nesting in twigs on small trees near the river.

66. *Pseudomyrma nigriceps* F. Smith.

Several workers were found at Abuná and Madeira-Mamoré Camp 41.

This species resembles *P. rufa* in structure and size. The color is different and striking, the head being black, and the rest of the body and appendages testaceous. It was not common.

67. *Pseudomyrma flavidula* F. Smith.

Common at Independencia and Ceará-Mirim, nesting in grass culms, the characteristic nesting site of the species.

68. *Pseudomyrma rufa* F. Smith.

Plate 7, fig. 56.

Worker. Length 6 mm.

Head, excluding mandibles, a little longer than broad, slightly narrowed behind, with convex sides and straight posterior border. Clypeus strongly keeled at middle; anterior border straight. Mandibles well developed, the blades finely dentate. Antennae thick; first funicular joint two and a half times as long as broad; apical joint as long as the two preceding. Ocelli distinct, very close together. Pronotum transverse, depressed, strongly margined at sides, with narrowly rounded humeri. Mesonotum longer than broad, the surface with a disc-shaped impression at the posterior half. Mesoëpinotal impression shallow. Epinotum more elevated than pro- and mesonotum, margined at sides basally, the surface distinctly concave; declivity as long as base, in profile straight. Petiole in profile elevated behind, above evenly rounded from base to apex, nearly as high as long; from above, more than twice as long as broad, narrowed above, with roundly margined sides and a narrow longitudinal impression at middle; anteroventral surface with a minute tooth; posterior surface concave. Postpetiole from above a little broader than long. Femora slightly thickened.

Subopaque, granulosely punctate, with very sparse gray pile; pubescence not abundant, pollinose, white. Mandibles finely punctate and pilose.

Color ferruginous, the meso- and epinotum infuscated.

Female (deälated). Length 7.5 mm. (Plate 7, fig. 56).

Head, excluding mandibles, one and a third times as long as broad, the anterior and posterior borders of equal width; sides slightly convex, posterior border straight. Clypeus keeled at middle, the anterior border projecting, with a stout, triangular tooth at middle. Mandibles stout, the blade with a stout, triangular, basal tooth, then three minute teeth and long, pointed apical and subapical teeth. Thorax slender. Pronotum narrower than mesothorax, twice as broad as long, with subparallel, margined sides and narrowly rounded humeri. Petiole seen in profile much as in worker; from above it differs in having the surface flat, and not depressed except at the apex, where there is a deep excavation dividing it into two triangular portions. Sculpture and pilosity much as in the worker; the pubescence of gaster very fine and silky.

Color as in worker, but the head is more infuscated.

Described from a female and several workers found in a twig lying on the ground at Pará.

69. *Pseudomyrma gracilis* (Fabricius).

Many colonies of what seems to be the typical form of this species were taken from twigs at Manaos. The workers (7.5 mm. in length) are colored black, excepting a narrow border at the anterior of head, the clypeus, mandibles, the tips of the front, and intermediate femora and the tarsi, which are ferruginous.

70. *Pseudomyrma excavata* Mayr.

Three workers from Manaos agree with specimens from Costa Rica received from Dr. Forel.

71. *Pseudomyrma laevigata* F. Smith.

One small colony found in a twig at Manaos. The specimens are yellow in color, without trace of maculation.

72. *Pseudomyrma mutilloides* Emery.

A worker each from Itacoatiara and Camp 39 Madeira-Mamoré Railroad.

73. *Pseudomyrma subtilissima* Emery subsp. *tenuissima* Emery.

Taken at Natal and Maranhao. The colony from the latter locality was taken from beneath a loose piece of bark, quite an unusual situation for Pseudomyrma. The type of *P. tenuissima* is from Matto Grosso. Emery records a specimen also from Cayenne.

74. *Pseudomyrma maculata* F. Smith.

One colony from Natal is very doubtfully referred to this species.

The worker is 4 mm. in length.

Head large, broadest in front, sides convex, posterior margin truncate, much broader than pronotum; antennae thickened at apex,

first funicular joint as long as second and third together. Metanotum evenly convex. First petiolar node elongate, slightly petiolate in front, about $1\frac{1}{2}$ times as long as second node, which is globose.

Color yellowish brown, abdomen fuscous; epinotum with a faint median longitudinal fuscous stripe.

75. *Pseudomyrma elegans* F. Smith.

Found frequently in the vicinity of Manaos. This is the only known ground-inhabiting species of the genus. The nests found were in bare places along the roadside. The entrance is circular, about two millimeters in diameter, and directly on the surface, without a mound.

76. *Pseudomyrma elongata* Mayr.

Many colonies found at Ceará-Mirim and Independencia. One large tree at Ceará-Mirim contained hundreds of colonies nesting in hollow twigs and in galls, scarcely a dead twig or a gall being without them. The twigs inhabited are those hollowed naturally or bored by other insects. *Pseudomyrma elongata* is decidedly beneficial to the tree in keeping away insect enemies. The tree mentioned was especially well protected, having several Azteca colonies and some populous wasp nests in addition to the Pseudomyrma.

77. *Pseudomyrma sericea* Mayr var. *altinoda*, var. nov.

Worker. Length 4 mm.

Head one and one third times as long as broad, slightly broader in front than behind, with convex sides and concave posterior border. Clypeus with distinct notch at middle. Eyes large. Antennal scape reaching one third its distance from place of insertion to posterior border of head. Basal funicular joint not as long as two succeeding joints taken together. Pronotum with well-defined margin. Promesonotal and mesoëpinotal sutures equally pronounced. Mesonotum small, seen in profile lower than pro- and epinotum, transverse, about one half the length of the pronotum. Epinotum longer than pro- and mesonotum together, evenly convex above; its declivity shorter than length of basal surface; angle between the two surfaces much rounded. Petiole two thirds as long as thorax, its nodes higher than epinotum, equal in length; anterior node convex in front,

declivous behind; posterior node nearly globose, broader than base of first segment of gaster. Gaster about as long as thorax. Legs robust.

Body opaque, everywhere with a fine mat of pale pubescence, and short, erect, pale pile.

Color fuscous, antennae and legs lighter. Differs from typical *P. sericea* in smaller size and fuscous color. *Pseudomyrma sericea* is black throughout, and the gaster is more robust.

Described from two workers from Porto Velho and one from Camp 39 Madeira-Mamoré R. R.

78. *Pseudomyrma gracilis* Fabricius subsp. *carapuna*, subsp. nov.

Worker. Length 10 mm.

Head, excluding mandibles, slightly longer than broad, contracted behind, with convex sides and slightly concave occipital border. Mandibles large and thick, with finely dentate blades. Clypeus small, slightly convex, anterior border truncate at middle. Antennal scape extending past opposite the middle of eye; first funicular joint three times as long as broad and longer than the second, apical joint as long as the two preceding together. Pronotum flat, with straight, distinctly margined sides and narrrowly rounded, projecting humeri. Mesothorax transverse. Mesoëpinotal suture as long as the pro- and mesonotum together, nearly as broad behind as in front; its basal surface margined at sides, shorter than the declivity. Peduncle of petiole nearly as long as the node; node elongate-globose. Post-petiole longer than broad, pyriform, nearly twice as broad as petiolar node. Gaster long and slender. Legs with slightly thickened femora.

Subopaque; petiole, postpetiole, and gaster shining; finely, densely punctate throughout; mandibles subopaque, finely punctate.

Pubescence more abundant than in typical *P. gracilis*, white. Pilosity short and abundant on head and thorax, longer and more sparse on petiole, postpetiole, and gaster; black in color. Head, thorax, epinotum, and legs black, the tarsi brown; petiole, post-petiole, and gaster bright ferrugineous.

Described from two workers taken on a shrub at Abuná. This form is very distinct from the other varieties of *P. gracilis* in its much larger size, and the bicolored body. In the latter respect it resembles *P. agilis* Emery from Central America, but is very much larger.

79. *Pheidole (Elasmopheidole) aberrans* Mayr.

One colony was found at Independencia. This species is distributed along the east coast, in the more arid localities from north of Cape San Roque to Argentina. Among the specimens before me some of the soldiers have the vertex of head, the thorax and epinotum piceous. Others from the same colony are reddish brown throughout, agreeing in this respect with a series from Buenos Ayres (Silvestri coll.) in the Wheeler collection.

80. *Pheidole (Pheidole) guilelmi-mülleri* Forel subsp. *mamore*, subsp. nov.

Soldier. Length 4.75 mm.

Head, excluding mandibles, a little longer than broad, slightly narrowed in front, with nearly straight sides, broadly rounded occipital corners and deeply, narrowly concave border. Clypeus convex, the carina short and thick; anterior border nearly straight. Mandibles short, very thick and blunt, the blade without teeth. Frontal carinae broad at base; antennal grooves longer than scapes. Scapes extending a little more than half the distance from eyes to occipital corners. Club shorter than remainder of funiculus; funicular joints 2–7 as long as broad. Eyes small and convex, located at sides of head at anterior third. Pronotum transverse, the sides extended into blunt cones. Promesonotal impression feeble. Mesonotum flat anteriorly; with a narrow transverse depression before the basal margin, which is somewhat elevated; declivous behind. Epinotum broadly depressed at base, the spines very stout, triangular and strongly diverging. Petiolar node in profile wedge-shaped; from above twice as broad as long. Postpetiole three times as broad as the petiole, conical at sides. Gaster elliptical. Legs short, femora and tibiae thickened.

Head subopaque, coarsely striate, striae extending over occiput; clypeus with several coarse punctures anteriorly. Mandibles subopaque; coarsely, sparsely punctate. Thorax subopaque with transverse, interrupted rugae. Epinotum sublucid, with a few fine transverse striae. Petiole and postpetiole closely, finely punctate. Gaster finely punctate, sublucid. Legs shining. Head, antennae, body, and legs with abundant long, rather stiff pile.

Color black, except the legs and apex of antennae which are castaneous.

Worker. Length 2.55 mm.

Head, excluding mandibles, as broad as long; sides and occipital margin evenly rounded. Mandibles long, slender, with three teeth apically. Clypeus slightly convex; anterior border truncate. Antennal scapes extending half their length beyond the occiput. Prothorax rounded, elevated. Promesonotal impression indistinct. Mesonotum in profile convex above, declivous behind. Epinotum flat and narrow above, the sides and posterior border slightly margined; the spines barely perceptible. Node of petiole in profile rounded above. Postpetiole a little broader than long, with rounded sides. Legs long, the femora and tibiae somewhat swollen. Minutely punctate and shining. Base of epinotum transversely carinate. Pilosity as in the soldier.

Color fuscous; petiole, postpetiole, and legs testaceous fuscous.

Female. Length 5.5 mm.

Head, excluding mandibles, broader than long, sides slightly convex; border of occiput only slightly concave. Mandibles similar to those of soldier. Antennae short, scapes extending three fourths the distance to occiput. Eyes large, located in front of middle of head. Other characters as in the soldier. Thorax flattened above, declivous in the epinotal region, the epinotal spines short and stout. Postpetiole twice as broad as the petiole, the sides drawn out into distinct cones. Gaster one and one half times length of head. Sculpture of head similar to that of the soldier. Pro- and mesothorax longitudinally striate. Epinotum sparsely and coarsely punctured. Gaster with fine punctures, shining.

Wings. Length a little over 5 mm. Slightly infuscated. Veins light fuscous.

Described from workers, soldiers, and a single female from a colony taken at Madeira-Mamoré Camp 36. This is a very distinct form, the soldier differing from that of typical *P. guilelmi-mülleri* in its smaller size, darker color, stronger cephalic sculpture, and in being much less shining. The worker is more shining and much darker than the soldier. It is much smaller than the closely related *P. hohenlohei* Forel from Brazil. The very minute epinotal spines of the worker are scarcely more than angles of the margin at the bases.

81. *Pheidole (Pheidole) wheeleri*, sp. nov.

Plate 3, fig. 23.

Soldier. (Plate 3, fig. 23). Length 3.5 mm.

Head, excluding mandibles, a fourth longer than broad, narrowed in front, with slightly convex sides, broadly rounded occipital corners and narrowly excavated border. Mandibles thick, blunt at apex, with one blunt subapical tooth. Clypeus flat, without a keel; the anterior border at middle rather strongly bisinuate. Frontal area large, triangular. Frontal carinae moderately elevated at base, nearly straight, diverging, extending as far as apex of antennal scapes. Antennal scapes slightly bent at base, thickened at apex; reaching to half the distance between eye and occipital corners. Funiculus short and thick, the club as long as the remainder; first joint twice as long as broad, joints 2–7 broader than long, joints 8–9 longer than broad; apical joint of club as long as the two preceding together. Eye small, flat, located at sides of anterior third of head. Pronotum twice as broad as long, in front narrow and flat; sides from above drawn out into strong conical projections, in front of which the straight side margins converge to the flattened portion. Promesonotal suture discernible, but not impressed. Mesonotum flat above to the posterior fourth, where it is declivous. Mesoëpinotal suture broad and deep. Base of epinotum longer than the declivity, narrowly excavated longitudinally; the sides rounded; base strongly depressed; spines stout, erect, half as long as the base. Petiolar node wedge-shaped in profile; from above, more than twice as broad as long. Postpetiole transverse, one and a half times as broad as the petiole, the sides bluntly conical. Gaster short and oval. Legs short, the femora very much swollen; tibiae thickened at anterior half.

Body, except epinotum, head, mandibles, antennae, and legs shining. Mandibles with very distinct, regular, scattered punctures; clypeus smooth and shining. Cheeks and sides of the anterior portion of front longitudinally striate, the striae short, extending to about opposite the eyes; the spaces between shining. Front with rather strong, regular, widely separated punctures. Pro- and mesonotum with sparse punctures; the conical lateral pronotal projections densely punctate at apex. Epinotum sublucid, shallowly granulosely punctate. Petiole, postpetiole, and gaster sparsely punctate, the posterior portion and sides of the postpetiole transversely rugulose.

Head, mandibles, antennae, body, and legs with rather abundant long silky pile.

Color dark reddish brown, gaster, epinotum, and a spot on the vertex much darker than the rest.

Worker. Length 2 mm.

Head, excluding mandibles, a little longer than broad, as broad in front as behind, with moderately convex sides and nearly straight occipital border. Mandibles long and slender, with long apical and subapical teeth. Clypeus convex, flattened anteriorly, the border concave at middle. Antennal scapes scarcely surpassing the occipital corners; all the funicular joints longer than broad. Eyes little convex; situated at middle of sides of head. Structure of thorax and abdomen similar to that of soldier. Sculpture and pilosity similar to that of the soldier, but the mesonotum is more closely punctate.

Color dark reddish brown throughout.

Described from soldiers and workers taken at Madeira-Mamoré Camp 39. The strongly prolonged sides of the pronotum, which, with the mesonotum, forms a diagonal quadrangle from above, is very characteristic. Both soldier and worker are very brightly shining, with the exception of the epinotum. The punctation of the head and especially that of the mandibles is coarse.

82. *Pheidole* (*Pheidole*) *carapuna*, sp. nov.

Plate 3, fig. 22.

Soldier. (Plate 3, fig. 22). Length 3.24 mm.

Head, excluding mandibles, one and a fourth times as long as broad, as broad in front as behind, with slightly convex sides and deeply, narrowly excavated border. Mandibles long and thick, the blade with a large subapical tooth, a large tooth near base and feeble denticles between. Clypeus depressed at sides and anteriorly, with a strong, narrow carina at middle and one on each side, the border rounded. Frontal carinae extending about half as far as the tips of antennal scapes. Eyes small, flat, located at anterior third of sides of head. Antennal scape slightly bent at base, thickened at apex, extending half the distance to occipital corners. Funiculus short, the first joint three times as long as thick; joints 2–8 as broad as long; club as long as the rest of the funiculus with the first two joints subequal, apical joint longer than the two preceding, connate. Pronotum and mesonotum in profile rounded, the sides of the former extended at the sides

in the form of a blunt cone. Promesonotal suture basally discernible. Epinotum at base strongly, broadly impressed for its entire length, the spines short, triangular and erect. Petiole thick, the node as deep as thick, from above one and a half times as long as broad; postpetiole from above transverse, narrowly rounded at sides. Gaster oval, short. Legs moderately long.

Sublucid. Mandibles shining, with sparse fine punctures at base. Front of head and cheeks with strong parallel striae, which become confused and disappear toward the vertex, where they are replaced by dense granulose punctation; this granulation extends forward, outward from the frontal carinae to the cheeks. Clypeus strongly, but more sparsely striate and shining. On the front and cheeks the spaces between the striae are smooth and shining; the occiput is very shining. Thorax and epinotum granulosely punctate. Node of petiole and postpetiole and base of first gastric segment with sparse, more shallow punctures; rest of gaster smooth and shining.

Head, thorax, and abdomen with long hairs, which are most abundant on the gaster. Sides of head in front sparsely pilose; antennae and legs with semierect hairs.

Worker. Length 1.5 mm.

Head, excluding mandibles, a little longer than broad, with slightly convex sides, broadly rounded occipital corners, and very slightly, narrowly concave border. Mandibles long, slender, the blades minutely denticulate. Clypeus convex, the anterior border rounded. Frontal carinae short, parallel. Antennal scapes surpassing the occipital corners by about one sixth of their length. Eyes large and convex, located at middle of sides of head. Thorax in profile rather low, evenly rounded. Promesonotal suture not discernible. Mesoëpinotal suture deeply impressed. Epinotum with equal base and declivity, the former depressed; spines very short, triangular. Petiole and postpetiole similar to those of worker.

Head, thorax, and epinotum subopaque; coarsely, densely granulose; cheeks with a few coarse striae. Petiolar node punctate; postpetiole and gaster smooth and shining. Head and body with sparse, fine hairs.

Color testaceous.

Female. Length 4 mm.

Head, excluding mandibles a little longer than broad, slightly narrowed in front, with feebly convex sides, shallowly excavated border. Mandibles and clypeus as in soldier. Antennal scapes extending three fourths the distance to occipital corners. Eyes large

and convex, situated at anterior third of head. Ocelli large, arranged in a triangle. Epinotal spines shorter than in the soldier. The rest similar to the soldier, with the usual sexual differences.

Sculpture of head similar to that of soldier, except that the coarse striae extend onto the vertex and occiput. Thorax smooth and shining. Epinotum transversely striate. Nodes and a space at the base of the first gastric segment granulously punctate. Pilosity as in the soldier.

Color dark fuscous, cheeks and clypeus lighter. Antennae and legs testaceous. Wings strongly infuscated; veins and stigma fuscous.

Described from several workers and a single female collected at Madeira-Mamoré Camp 39. The color of the soldier is striking. The head is rich reddish brown, darker on the vertex and front and lighter on the cheeks and clypeus. The mandibles are a rich red wine-color. The thorax and epinotum are dark fuscous, the gaster is similarly colored, but with the first segment lighter basally. This species approaches *P. susannae* Forel from which it differs in the much longer and differently sculptured head, the feeble promesonotal impression, and in color.

83. *Pheidole* (*Pheidole*) *triconstricta* Forel var. *laidlowi*, var. nov.

Soldier. Length 3.5 mm.

Head, excluding the mandibles, a little longer than broad, slightly broader in front than behind; posterior corners rounded; occipital margin rather deeply impressed; occiput at middle with a deep impression which extends to clypeus, becoming shallow anteriorly. Frontal carinae more than half the length of the scape, sharply defined. Eyes at sides of the anterior third of head. Mandibles convex, bidentate, the teeth thick and subequal. Clypeus trapezoidal, flattened, truncate in front and behind, with a narrow median impression from middle of front extending two thirds the distance to base. Frontal carinae diverging behind. Antennal scapes reaching three fourths the distance to occiput. Antennal club a little shorter than the rest of the funiculus, funicular joints 2–7 broader than long. Prothorax rounded above, sides a little in front of middle drawn out angulately. Promesonotal impression distinct. Mesonotum seen from above trapezoidal, narrowed in front, deeply, transversely constricted at middle, the posterior portion elevated into a ridge. Mesoëpinotal constriction deep and broad. Base of epinotum as long as declivity,

deeply concave; on either side with a high ridge which terminates in an acute, erect spine, about two thirds as long as the base. Petiole twice the length of postpetiole, the node broader than long, with conical sides; seen from the side concave in front, higher than postpetiole. Postpetiole broader than long, the sides conical.

Gaster smaller than the head. Legs slender. Head and gaster shining, thorax and petiole subopaque. Mandibles very finely punctate. Head densely, minutely punctate. Thorax, petiole, and postpetiole with more dense punctures. Legs finely punctate, shining.

Thorax without hairs, head, petiole, and gaster with sparse, scattered erect hairs.

Color pale brownish yellow, mandibles dark ferruginous.

Worker. Length 2 mm.

Head, excluding the mandibles, a little longer than broad, with convex sides and evenly rounded posterior margin. Eyes at sides of head in front of middle. Mandibles with two very acute teeth. Antennal scapes extending one third their length beyond the occipital margin. Thorax similar to that of the soldier, but the prothorax more rounded at sides. Epinotum, petiole, and postpetiole similar to those of soldier. Gaster as large as head.

Head, legs, and gaster shining, the rest of the body opaque.

Pilosity and color like those of the soldier. The hairs are even sparser. Mandibles and border of clypeus darker.

Described from several soldiers and workers from Madeira-Mamoré R. R. Camp 37.

Differing from the typical form in the smaller size, and pale color. The antennal scapes of the soldier are proportionally longer, reaching three fourths the distance to corners of occiput.

Named after Dr. James Laidlow, of the medical corps of the Madeira-Mamoré Railroad.

84. *Pheidole* (*Pheidole*) *biconstricta* Mayr.

Manaos, Porto Velho, Abuná and Camps 39, 41, 43 Madeira-Mamoré R. R.

On the Rio Madeira this species was very common, nesting in or beneath rotten logs. The colonies are very populous.

85. *Pheidole* (*Pheidole*) *biconstricta* subsp. *bicolor* Emery.

Madeira-Mamoré R. R. Camp 39.

86. *Pheidole (Pheidole) biconstricta* subsp. *burtoni*, subsp. nov.

Plate 3, fig. 24.

Soldier. Length 6 mm.

Head, excluding mandibles, a little longer than broad, much narrowed in front, with convex sides, narrowly rounded occipital corners and deeply and narrowly excised posterior border. Mandibles thick, the blade with five short, very blunt teeth and a large subapical tooth. Clypeus rather flat, feebly carinate; anterior border strongly excised at middle. Frontal area large, triangular, impressed. Frontal carinae a third as long as antennal scapes. Antennal scapes broadly rounded at base, somewhat thickened apically, extending less than half the distance from the eyes to posterior corners of head. Club as long as the remainder of funiculus; funicular joints 2–7 as long as broad. Eyes small, convex, located at sides of anterior third of head. Pronotum similar to that of *P. biconstricta*, but the corners are somewhat more angulate. Mesonotum slightly convex above, with feeble transverse impression posteriorly. Base of epinotum much less impressed than in *P. biconstricta*. Petiolar node and postpetiole broader than long; the latter conical at sides.

Subopaque, except the occipital corners, mandibles, and clypeus, which are shining. Mandibles strongly striate at base and regularly punctate throughout. Head coarsely shagreened, coarsely longitudinally rugose between the frontal carinae. Vertex and occiput with foveolate punctures. Thorax and abdomen shagreened, the gaster more shallowly than the rest. Legs finely punctate. Each of the foveolate punctures on the head bears a short, stiff, recumbent hair. Body, antennae, and legs throughout with long, stiff pile.

Head, posterior portion of pronotum, and epinotum piceous; mandibles and clypeus red, the rest castaneous, the gaster distinctly lighter than the other parts.

Described from a single soldier taken at Porto Velho. The sculpture of the head is very different from the other forms of *P. biconstricta* and the transverse mesothoracic impression is broader and more shallow.

87. *Pheidole (Pheidole) fallax* Mayr subsp. *emiliae* Forel.

Several soldiers and workers were taken at Manaos.

88. *Pheidole* (*Pheidole*) *fallax* subsp. *jelksii* Mayr.

Found at Abuná, Bolivia, and at Porto Velho, Brazil.

89. *Pheidole* (*Pheidole*) *fallax* subsp. *jelskii* var. *antillensis* Forel.

Several workers and soldiers from Pará and Abuná, Bolivia agree closely with West Indian specimens before me.

90. *Pheidole* (*Pheidole*) *impressa* Mayr.

Two soldiers of this curiously colored species were taken at Baixa Verde. Since the types were described from Baturité in Ceará, the species has not been recorded. My soldiers differ a little in color from those described by Mayr, but otherwise agree closely with his description. The head is ferruginous instead of ochre-yellow and the gaster black. It may be that the Baixa Verde specimens represent an undescribed color variety, but I think it more probable that those before Mayr were more immature and the color not fully developed.

91. *Pheidole* (*Pheidole*) *wallacei*, sp. nov.

Soldier. Length 6 mm.

Head, excluding mandibles, longer than broad, narrowed behind; sides slightly convex; occipital corners narrowly rounded, the border with a shallow, narrow incision. Mandibles large and stout, the apical tooth long; blade with a short, stout subapical tooth and several very small teeth. Clypeus depressed; anterior border distinctly concave at middle. Frontal carinae strong and thin at base, extending only slightly past the antennal pits. Frontal area strongly depressed. Antennal scapes slender, extending almost to occipital corners, moderately bent at base; funiculus long and very slender, the first joint somewhat swollen, joints 2–8 cylindrical, three times as long as broad; club very slender, a little more than half as long as the rest of funiculus, the joints about four times as long as broad, apical joint a little longer than the penultimate. Eyes small, convex, located at anterior third of head. Pronotum in profile evenly rounded; the sides slightly drawn out and rounded a little posterior to the middle. Mesonotum in profile angulate at middle, the anterior part flat, the posterior declivous. Base of epinotum much longer than the declivity,

flat anteriorly, narrowly impressed posteriorly; spines triangular, the width at base greater than the height. Petiolar node twice as broad as long, in profile triangular. Postpetiole one and a half times as broad as long, narrowly rounded at sides. Gaster short, oval. Legs very long and slender.

Head shining; cheeks and front with widely separated rugae, which extend only slightly posterior to the eyes; front and vertex with sparse, distinct punctures. Mandibles sublucid, very coarsely and sparsely punctured at base. Thorax, epinotum, petiole, and postpetiole with sparse interrupted transverse rugae; the spaces between the rugae shining. Gaster finely punctate, shining. Funiculus sparsely pubescent, head, body, antennae, and legs with long hairs.

Color ferruginous; anterior border of head and the mandibles brownish red. Pile golden yellow.

Worker. Length 5 mm.

Form very long and slender. Head, excluding mandibles, much longer than broad, strongly narrowed behind to form a distinct neck, the posterior border of which is broadly expanded and elevated. Mandibles long, acuminate at tip, with a long subapical tooth and several shorter teeth. Clypeus depressed in front, the border strongly concave at middle. Frontal carinae subparallel, extending to opposite the anterior border of eyes. Eyes large and convex, situated at sides of front, anterior to the middle of head. Antennae very long and slender, the scapes about twice as long as the head including the neck; funicular joints similar to those of worker. Pronotum longer than broad, strongly narrowed in front; broadest behind middle; the pleurae extended behind into small elongate tubercles. Promesonotal suture strongly impressed. Mesonotum longer than broad, little convex. Mesoëpinotal impression broad and deep. Base of epinotum distinctly longer than the declivity, rounded above; spines very short, triangular, erect, located closer together than their distance from the sides. Petiolar node one and a half times as long as broad, triangular in profile. Postpetiole longer than broad, with rounded sides. Gaster oval. Legs very long and slender.

Sublucid. Cheeks with distinct, widely separated rugae. Front and vertex sparsely punctate. Mandibles sublucid, finely punctate. Pronotum in front with very sparse, transverse rugae, the rest of thorax and the abdomen finely punctate. Pile similar to that of soldier, but more sparse.

Color light ferruginous, anterior border of head, the mandibles, and the antennal club darker.

Described from several workers and soldiers, Madeira-Mamoré Camps 39 and 46. This very distinct and striking species is related to *P. bergi* Mayr and *P. oxyops* Forel, but is quite distinct from either. From *P. bergi* the soldier differs in the much longer antennal scapes, the more slender club, the differently shaped epinotum, which in *P. bergi* is broadly depressed, and in the much smaller size of the epinotal spines. *Pheidole wallacei* is a larger and more slender species.

The structure of the worker's head, long drawn out behind, and the very slender thorax and epinotum, and the small size of the spines distinguish it from the worker of *P. bergi*. The worker of the latter species has the meso- and epinotum granulously punctate and subopaque instead of smooth and shining as in *P. wallacei*. The worker has extremely long legs. Those which I observed were on the ground and entering a hole beneath a tree, where the nest was probably located.

92. *Pheidole* (*Pheidole*) *opaca* Mayr.

Numerous workers, soldiers and females from Pará, Abuná, and Madeira-Mamoré Camp 39, where it occurred commonly in populous colonies beneath logs.

93. *Pheidole* (*Pheidole*) *fimbriata* Roger.

A single soldier of this characteristic species was found at Ceará-Mirim, and a female at Madeira-Mamoré Camp 39.

94. *Pheidole* (*Pheidole*) *flavens* Roger.

Natal, Ceará-Mirim, Independencia, and Pará.

95. *Pheidole* (*Pheidole*) *flavens* subsp. *exigua* Mayr.

Taken at Ceará-Mirim and Independencia.

96. *Pheidole* (*Pheidole*) *colobopsis*, sp. nov.

Plate **3**, figs. 25, 26.

Female (deälated). Length 4 mm.

Head, excluding mandibles, a little longer than broad; broadest

in front, with nearly straight sides, concave occipital border and narrowly rounded corners; anterior corners right-angled. Vertex slightly rounded above, a little longer than the front. Front separated from vertex by a distinct angle, and forming with the mandibles a disc; very strongly impressed with a deeper, longitudinal groove at middle. Frontal area small, triangular, more deeply impressed than the front. Clypeus deeply impressed at middle; the anterior margin carinate at middle, broadly crenulate. Frontal carinae strong, extending sinuately to ends of antennal scapes. Mandibles very short and thick, the blade slightly concave, edentate. Antennae short, the scape extending a little more than half the distance to occipital corners, strongly geniculate at the angle which separates front from vertex, thickened distally. First funicular joint as long as the two succeeding joints, joints 2–8 as long as broad; joints 9–11 forming a club as long as remainder of funiculus. Eyes large, oval, flat, with distinct ommatidia; situated at sides in front of middle. Antennal fossae deep; extending to apex of scape. Ocelli distinct, the median much the largest, each situated in a foveole, the median of which is extended forward as a groove. Thorax rather flat above, sides rounded; mesothorax a little longer than broad; scutellum rounded behind. Epinotum with subequal base and declivity; the base strongly concave at middle, with elevated sides, which terminate in short thick, acuminate spines; surface of declivity concave, but less so than the base. Petiole elongate; the node transverse, in profile narrowed above, constricted behind. Postpetiole twice as broad as petiole, the sides produced into angles, rounded in front, constricted behind; in profile evenly convex above. Gaster oval, broad at apex.

Shining, with abundant silky pilosity, which is partly recumbent on gaster and erect on the other parts of body. Cheeks, front, and clypeus devoid of hairs. Vertex longitudinally, crenulately striolate, front and clypeus with striolae arranged in a concentric pattern. Mandibles with five transverse, diagonal carinae. Thorax, petiole, and postpetiole minutely punctate; postpetiole above with five short longitudinal carinae.

Color testaceous; mandibular blades and posterior margins of gastric segments darker. Pilosity yellow.

Described from a single female taken at Madeira-Mamoré Camp No. 41. It was beneath a log, in company with a colony of *Myrmicocrypta foreli*. This is the first known South American Pheidole belonging to the group of species which have the front of the head depressed and disc-like, somewhat similar to that of the major worker in Camponotus subgenus Colobopsis.

97. *Crematogaster (Crematogaster) stolli* Forel.

This very distinct species was abundant at all the localities visited along the Rio Madeira. The covered galleries that it constructs superficially resemble termite runways, but are built of fibrous material. They extend along tree trunks, often in an irregular spiral direction around the tree and branching to the limbs. The nest varies from hemispherical to broad and flat, up to five or six inches in width, though generally smaller. The brood-chambers are in deep cavities. The acrid secretion from the anal glands of *C. stolli* is much more pungent than that of any other Crematogaster which I have observed.

98. *Crematogaster (Crematogaster) stolli* subsp. *autruni*, subsp. nov.

Worker. Length 4.5 mm.

Head, excluding mandibles, a little broader than long, as broad in front as behind, with rounded sides, broadly rounded occipital corners; the occipital border nearly straight, but narrowly concave at middle. Clypeus about as broad as long, with slightly rounded surface and broadly rounded anterior border. Mandibles short and stout. Frontal carinae feeble, but distinct, extending to opposite the eyes, which are located at middle of sides of head. Eyes small and flat. Antennae short and stout, the scapes arcuate, much thickened distally, extending about two thirds the distance to occipital corners. First funicular joint as long as the two succeeding joints taken together; joints 2–7 as long as broad. Pro- and mesonotum together as broad as long, evenly rounded above and at sides. Epinotum with subequal base and declivity, the base rounded in profile, the surface of base concave. Spines moderately long and stout. Petiole in profile about twice as long as broad; from above, flattened and two thirds as broad as long. Postpetiole elongate, rounded. Legs stout. Gaster of medium length, triangular.

Body sublucid. Head in front with sparse, fine punctation; cheeks, sides of head and a space parallel to the frontal carinae densely striolate. Mandibles rugosely striolate, with a few fine recumbent white hairs. Antennae punctate, the funiculus with considerable fine, recumbent pile. Promesonotum finely rugulosely punctate, with a few very fine hairs. Epinotum and mesothoracic pleurae

coarsely striolate. Petiole and postpetiole rugosely punctate. Gaster subopaque, densely punctate, with a few erect black hairs.

Color black, except the head, which is somewhat reddish.

Described from six workers taken near Manaos. This form, which is named after Don Antonio Autrun, our genial host at Kete Purangi, differs from *C. stolli* in the shorter antennal scapes and in sculpture and color, besides being smaller. The epinotal spines are shorter and thicker and the head and thorax lack the long, erect hairs of *C. stolli*. I am in doubt whether *C. autruni* should not be considered as specifically distinct rather than as a subspecies.

99. *Crematogaster* (*Crematogaster*) *heathi*, sp. nov.

Plate 3, fig. 27.

Worker. Length 2.5 mm.

Head about as broad as long, with slightly convex sides and broadly rounded occipital corners; occiput faintly excavated. Eyes small, little convex, located at sides of head slightly posterior to middle. Mandibles short and stout, the blade strongly concave. Antennal scape not reaching the occipital corners; funicular joints, except those of the club, subglobose, as broad as long. Clypeus quadrate, as broad as long, the anterior border broadly rounded. Prothorax subglobose; pronotum as broad as long, with narrowly rounded sides, so that the disc is transversely oval, broadly rounded above. Epinotum with a very short base, which is narrowly rounded, giving in profile the appearance of a tubercle; the declivity is three times as long as the base, with a broad, flat surface, on either side of which is a strong spine curving outward and upward. Petiole flattened above, not quite so broad as long, with straight posterior margin; postpetiole subglobular. Gaster short and broad, triangular.

Head shining, minutely punctate throughout, the front with sparse, coarse punctures. Thorax, petiole, postpetiole, and legs sublucid. Gaster subopaque, densely punctate. Head and thorax, petiole and postpetiole in front sparsely pilose, the pile fine and recumbent. Antennæ, legs, and abdomen with erect pilosity.

Color red, except the gaster, which is black, and the legs, which are somewhat infuscated. Pile and pubescence yellowish.

Described from a large number of workers taken from twigs at Independencia. This species is related to *C. brevispinosa* from which it differs in the structure of the epinotum and in the absence of teeth

on the mandibular blades. In living specimens the black color of the gaster is in vivid contrast to the red of the other parts.

100. *Crematogaster* (*Crematogaster*) *brevispinosa* Mayr.

Several colonies of this well-marked species were taken at Itacoatiara and Abuná, Bolivia.

101. *Crematogaster* (*Crematogaster*) *brevispinosa* subsp. *rochai* Forel.

This is common at Natal and Baixa Verde, where numerous colonies were found. The workers agree closely with cotypes from Ceará.

102. *Crematogaster* (*Crematogaster*) *victima* F. Smith.

Many colonies were found in hollow twigs at Natal, Baixa Verde, Independencia, Pará, and Madeira-Mamoré Camp 39.

103. *Crematogaster* (*Crematogaster*) *sulcata* Mayr.

Abuná, Rio Madeira.

104. *Crematogaster* (*Crematogaster*) *limata* F. Smith.

Common at Manaos and Porto Velho. A colony at the latter locality was nesting in a leguminaceous pod.

105. *Crematogaster* (*Crematogaster*) *brasiliensis* Mayr.

Manaos and Porto Velho.

106. *Crematogaster* (*Crematogaster*) *longispinosa* Emery.

Many workers were taken at Abuná.

107. *Crematogaster* (*Crematogaster*) *acuta* (Fabricius).

Many workers are in the collection from Madeira-Mamoré Camp 39.

108. *Monomorium (Mitara) subterraneum*, sp. nov.

Plate 4, figs. 29, 30.

Worker. (Plate 4, figs. 29, 30). Length 3.5 mm. to 5 mm.

Head, excluding mandibles, as long as broad, nearly as broad in front as behind, with convex sides and feebly concave occipital border. Eyes small, located at sides of head, a little posterior to the middle. Clypeus very convex, unarmed, the anterior border somewhat concave. Frontal carinae short, straight. Antennae 11-jointed; scapes extending a little past the occipital corners of head; first funicular joint longer than broad and nearly twice the length of the second, which is a little longer than broad; joints 3–7 as broad as long; joints 8–10 forming an elongate club, almost as long as the rest of funiculus, the apical joint of which is longer than the two preceding together. Mandibles rather thick, the blade with five strong teeth. Pronotum transverse, convex above and at sides, broadest a little behind the middle. Promesonotal suture barely perceptible; mesoëpinotal impression strong. Epinotum in profile evenly rounded; the sides very feebly margined. Petiole slender, the node in profile deeper than thick, rounded above, convex at the anterior, flat at the posterior surfaces. Postpetiole transverse, subglobose. Gaster as long as thorax and epinotum, broadly oval. Legs long and slender.

Sublucid. Mandibles, sides of clypeus, and frontal carinae coarsely striate longitudinally; cheeks with strong concentric striae, which terminate at the carinae, the vertex with sparse irregular rugae, the rest of head and the thorax densely punctulate. Epinotum transversely, and the posterior surfaces of the petiolar and postpetiolar nodes longitudinally carinulate. Gaster shining, sparsely punctate. Apical half of funiculus pubescent; the rest without pubescence but abundantly pilose, the pile stiff and erect.

Color testaceous, with a fuscous blotch on the front and vertex.

Described from a number of workers from Madeira-Mamoré Camp 39. These were in the ground, beneath the base of a recently uprooted palm, about three feet below the surface.

In a recent paper (Ann. Soc. ent. Belg. 1913, **57**, p. 261) Emery has divided those species of Monomorium which have eleven-jointed antennae into three subgenera. Of these, *M. subterraneum* must be placed in Mitara, which hitherto has contained only African, Asiatic, and Australian species. The species in this subgenus have the clypeus entirely without denticles or carinae, the eyes developed, and

the epinotum unarmed. *Monomorium subterraneum* is very different from any other of the American Monomoriums on account of these characters, and also because it is an unusually large species, with considerable variation in size between the largest and smallest workers. The small eyes, the abundant stiff hairs with which the body is covered, and the color, as well as the location in which the colony was found, indicate that this species is hypogaeic in habit.

109. *Megalomyrmex bituberculatus* Forel.

Many workers which agree closely with specimens from the Rio Purus, received from Forel, were taken at Manaos, Porto Velho, and Madeira-Mamoré Camps 39 and 41. This form, which is confined to the upper Amazonian region, attends Membracidae and the workers were generally found in company with these on shrubs in the deep forest. The nest is subterranean, the entrance nearly always at the base of a tree. The living insect is slow in its movements.

110. *Megalomyrmex wallacei*, sp. nov.

Plate **3**, fig. 28.

Worker. (Plate **3**, figs. 28). Length 5 mm.

Head, excluding mandibles, one and a third times as long as broad, broadest at clypeus, strongly narrowed above eyes, with slightly convex sides and straight occipital border, the latter distinctly, though narrowly, margined. Clypeus long and narrow, not separated from frontal area, the sides extending to outer bases of mandibles; anterior border projecting and narrowly rounded at middle. Frontal carinae distinct, elevated at insertion of antennae, parallel, extending to opposite anterior border of eye. Mandibles long and acuminate, the blade with four pointed teeth. Eyes large and very convex, situated at sides of front of head, a little anterior to the middle. Antennae long and slender; extending about one third their length beyond the occipital corners. First funicular joint nearly twice as long as the second, joints 2–8 subequal, longer than broad, cylindrical, joints 9 and 10 subequal, each twice as long as the eighth and a little shorter than the apical. Thorax long and slender. Prothorax slightly rounded above, sides rounded. Promesonotal suture faint.

Mesonotum pyriform, flattened behind, with a feeble transverse impression at middle and a longitudinal impression in front, the sides slightly margined posteriorly. Epinotum in profile rather flat above; its base about twice as long as declivity, into which it passes at a broad rounded angle; surface of base broadly concave, that of declivity flat; base of declivity with broad, ear-shaped tubercles. Petiole one and a half times length of postpetiole, without anteroventral tooth; the node in profile as deep as broad, concave in front, rounded behind, with a constriction near apex. Postpetiole broader than petiolar node, rounded above, the anterior surface nearly straight; anteroventral border angulate in front, but without distinct tubercle or tooth. Legs long and slender.

Gaster shining, sparsely, regularly punctate; rest of body and the legs subopaque. Head and thorax rugulosely punctulate, a median, longitudinal surface on the front less so and more shining than the rest; front of head between frontal carinae and eye concentrically striolate. Mandibles shining, coarsely striate. Epinotum and petiolar node transversely striolate; postpetiole rugulose like the front of head. Body and legs everywhere with abundant erect hairs. Mandibles, funiculus, and antennal scapes with semierect hairs, last four funicular joints pubescent.

Color light ferruginous, pile and pubescence yellow.

Female (deälated). Length 6.5 mm.

Closely resembling the worker. The white ocelli are small, but distinct. The smooth surface on the front is shorter but more distinctly shining than in the worker.

Described from a single female and several workers found at Porto Velho. This species is near *M. iheringi* Forel, from which it differs in its larger size, the head more constricted behind, in the much larger size of the eye, and in the subopacity of the tegument, which in *M. iheringi* is shining.

111. *Tranopelta gilva* Mayr. var. *albida*, var. nov.

Several workers of a small variety of *Tranopelta gilva* Mayr were taken at Camp 39, Madeira-Mamoré R. R. These differ from var. *brunnea* Forel, the only form of which the worker is known, in the smaller size (length 1.5 mm.) and in the uniformly pale color which in the series before me is almost white, with a faint tinge of yellow.

112. *Solenopsis picea* Emery var. *subadpressa* Forel.

This variety, somewhat larger than the typical Costa Rican form, was described by Forel from specimens collected by Sr. Diaz da Rocha at Ceará. Specimens which agree well with cotypes in the Wheeler collection were taken at Porto Velho, Abuná, and Madeira-Mamoré R. R. Co. Camp 39.

113. *Solenopsis globularia* (F. Smith).

One colony with numerous workers and females was found at Natal. The large size and globular shape of the postpetiole distinguish this from related species.

114. *Solenopsis subtilis* Emery.

One small colony was taken at Manaos.

115. *Solenopsis geminata* (Fabricius).

Colonies of the typical form of this widely distributed species were found at Natal, Independencia, Baixa Verde, Itacoatiara, Manaos, and Porto Velho.

116. *Solenopsis geminata* (Fabricius) subsp. *medusa*, subsp. nov.

Plate 4, fig. 31.

In a number of colonies from Ceará-Mirim and the Maranguapé mountains the largest headed of the soldiers differ from those of typical *S. geminata* in having the sides of head at the anterior corners broadly expanded, as shown in Plate 4, fig. 31.

I can detect no character in the smaller soldiers and workers that will distinguish them from the same phases of *S. geminata*, but the difference between the largest soldiers is striking and constant and seems to be of subspecific value. It is probably a local race, limited to the east coastal region of Brazil.

117. *Solenopsis saevissima* (F. Smith).

Very abundant at Pará, Itacoatiara, and Manaos in Brazil and at Abuná, Bolivia. There can be no doubt that this species is the one

described by Smith from specimens sent to him by Bates and of which the latter has given an interesting account in his Naturalist on the River Amazons. It is the common fire ant ("formigo do fogo" of the Brazilians) of the Amazonian region, where it occurs generally in cultivated districts and is a bad pest. The colonies are large and numerous and the individuals highly aggressive, and, because of their numbers and painful sting, very formidable.

Smith's name has long been included with the synonyms of *S. geminata,* and *S. saevissima* was redescribed as *S. pylades* by Forel, but from field observations, compared with the notes of Bates and Smith and compared with specimens of *S. pylades* determined by Forel I am certain that the name given by the former author applies to this species.

118. *Leptothorax (Goniothorax) echinatinodis* Forel subsp. *spininodis* Mayr.

Plate 4, fig. 36.

Many workers and males from colonies which were nesting in twigs at Independencia, Ceará-Mirim, and Manaos agree closely with Mayr's description, except that in the entire series before me the tips of the femora are distinctly infuscated.

The types of this species were taken from an egg-case of a species of Mantis from a doubtful locality.

119. *Tetramorium (Tetrogmus) simillimum* F. Smith.

Several workers of this tropicopolitan species were taken at Manaos.

120. *Wasmannia auropunctata* (Roger).

This is one of the most widely spread Neotropical ants. It was taken in Brazil at Natal, Independencia, Itacoatiara, Manaos, Porto Velho, Madeira-Mamoré Camps 39 and 41, and at Abuná, Bolivia.

121. *Cryptocerus (Cephalotes) atratus* (Linné).

Common throughout northern Brazil. Taken by the Expedition at Pará, Manaos, Itacoatiara, and on the upper Rio Madeira. The species nests generally in hollowed branches of high trees, though one

nest was in the hollowed trunk of a small tree. It is omnivorous in habit, frequenting garbage and eating even carrion. Some dead macaws which I placed in the woods as bait for carrion-feeding insects were continually covered by *C. atratus*, to the exclusion of other insects. It is diurnal, and a striking form as it walks slowly about on tree trunks and logs. The hard spiny armor is sufficient to protect it from any ordinary enemy.

122. *Cryptocerus (Cephalotes) oculatus* (Spinola).

One colony from Pará.

123. *Cryptocerus (Zacryptocerus) clypeatus* (Fabricius).

This species was very common at all places along the Rio Madeira, and at Itacoatiara and Santarem. A large colony was found nesting in a hollow parasitic vine.

124. *Cryptocerus (Cryptocerus) umbraculatus* (Fabricius).

A colony found at Abuná, Rio Madeira was nesting in a hollow branch near the top of a recently felled tree.

125. *Cryptocerus (Cryptocerus) inaequalis*, sp. nov.

Worker. Length 5.25 mm.

Head broader than long, broadest behind the eyes; narrowed in front. Posterior margin straight, the angles projecting as lamellae, and broadly concave at apex. Sides and anterior corners of head evenly rounded. Anterior margin of clypeus deeply concave. Pro- and mesothorax together as broad as long; prothorax angulate at the anterior corners and with a pair of flat triangular teeth at posterior half of margin. Sides of mesothorax with a short slender spine at middle. Epinotum more than twice as broad as long, with two broad teeth at sides. Petiole and postpetiole subequal in width. Petiole with long, slender, backward curving spines. Spines of the postpetiole short and broad, projecting forward. Gaster broadly cordiform, very convex above; anterior third of sides broadly margined; excised at middle of anterior border.

Subopaque. Sparsely, foveolately punctate above, except the gas-

ter, which is finely and densely punctate. Legs foveolately punctate. Each puncture bearing a glistening scale-like hair.

Color black, with the marginate portions of the head and gaster yellow, and the tibiae ferruginous.

Described from four workers from Abuná and Madeira-Mamoré Camp 41.

The very long, slender, and curved spines of the petiole, compared with those of the postpetiole, and the lamellate occipital corners, with the concave apices are characteristic of this species. It is related to *C. spinosus* but differs in the form of the spines, and the absence of pile on the dorsum.

126. *Cryptocerus* (*Cryptocerus*) *spinosus* Mayr.

One colony found at Porto Velho, Rio Madeira.

127. *Cryptocerus* (*Cryptocerus*) *pusillus* Klug.

Widely distributed throughout Brazil. Numerous specimens were taken at Ceará, running along the wires of a fence, in the posts of which they were nesting. At Manaos a colony was taken from a hollow twig.

128. *Cryptocerus* (*Cryptocerus*) *minutus* (Fabricius).

Nesting in twigs at Natal, Manaos, Itacoatiara, and Porto Velho.

129. *Cryptocerus* (*Cryptocerus*) *depressus* Klug.

This was the commonest species of the genus at Manaos.

130. *Cryptocerus* (*Cryptocerus*) *maculatus* F. Smith.

A few specimens were taken at Natal, and a colony was found in a hollow twig on a cajú tree at Abuná, Bolivia.

131. *Cryptocerus* (*Cryptocerus*) *multispinus* Emery.

A single worker from Abuná.

132. *Cryptocerus* (*Cryptocerus*) *cordatus* F. Smith.

A small colony from Porto Velho.

133. *Cryptocerus (Cryptocerus) complanatus* Guérin.

Plate **4**, fig. 35.

A colony of *C. complanatus*, originally described from Cayenne, was taken from a twig at Itacoatiara. The species belongs to the group containing *C. cordatus*, *C. spinosus*, and *C. inaequalis*.

Worker. Length 5 mm.

The head is as broad as long, margin of occiput only slightly concave, the corners broadly angulate, without spines; front narrower than occiput; sides in front of eyes convex. Thorax longer than broad. Sides of prothorax narrowly margined, nearly straight; anterior corners angulate. Mesothorax with short spine at sides. Epinotum three times as broad as long, with a blunt spine at middle and a longer one at apical corners. Spines of petiole and postpetiole curved backward, those of the petiole the largest. Abdomen cordate, without dorsal impression at base.

Body subopaque, coarsely punctate, each puncture with a short silvery hair.

Color black throughout.

Soldier. (Plate **4**, fig. 35). Length 6 mm.

The body is less hairy and more shining than in the worker. The transverse carina between the pro- and mesothorax is prominent at sides and more feeble on disc. The angles at anterior corners of prothorax are acute. Mesothorax with short, blunt spines at sides. Epinotum without spine at middle; the corners with a short, pointed spine. Spines of petiole and postpetiole similar to those of worker, but stouter.

Color black.

The worker agrees in outline with the Peruvian specimen figured by Emery (Bull. Soc. ent. Ital. 22, 1890, **22**, p. 75, pl. 9, fig. 6). The outline of the soldier is shown in Plate **4**, fig. 35.

134. *Cryptocerus (Cryptocerus) pilosus* Emery var. *fiebrigi* Forel.

Several workers and soldiers from Natal agree closely with the description and with cotypes of this variety received from Dr. Forel. This very distinct species has not been hitherto recorded from Brazil, but undoubtedly is widely distributed along the coast.

135. *Daceton armigerum* (Latreille).

There were several colonies of this species in the grounds of the Zoölogical Garden at Pará, where workers were often seen on the fences and trees. At Itacoatiara I found a very large colony nesting in a hollow standing tree.

136. *Acanthognathus ocellatus* Mayr.

Plate 5, fig. 39.

Female. (Plate 5, fig. 35). Length 3.5 mm.

Head cordate; excluding mandibles, twice as long as broad, with convex sides and deeply excised occiput. Eyes large, convex, situated at middle of sides of head. Ocelli small, convex, white in color. Clypeus longer than broad, its anterior border truncate. Antennae slender and short; the scape not attaining the occipital corners, bent and slightly thickened distally; first funicular joint two and a half times as long as broad; joints 3–9 scarcely longer than broad; last two much longer than broad, the apical nearly twice the length of penultimate. Mandibles nearly as long as head, slender, straight; apex with two long subequal teeth and a shorter tooth. On the inner side near the base is a curved process, which extends upward a little past the base. This is bidentate at apex. Pronotum very narrow; in profile flat. Mesonotum evenly rounded above and at sides. Scutellum rounded. Epinotum with base and declivity subequal in length, the angle bearing a pair of stout, acute spines. Petiole elongate, slender, the node globular. Postpetiole subglobose, about as large as the petiolar node. Gaster short and thick.

Head in front somewhat shining; genae and occiput smooth and shining. Mandibles finely punctate. Antennae and thorax subopaque, the latter coarsely, rugosely punctate. Scutellum with five feeble longitudinal carinae. Petiole, postpetiole, gaster, and legs finely punctate, shining.

Front of head and occiput, thorax, petiole, postpetiole, gaster, legs, and antennal scapes pilose.

Color ferruginous; the front of head, thorax, and gaster darkest, legs lightest.

Described from one female which was found with a solitary worker beneath a board on the ground at Pará.

137. *Strumigenys smithi* Forel.

A single worker from Pará is in the collection.

138. *Strumigenys schulzi* Emery.

A single female and several workers were taken at Pará, the type-locality.

139. *Atta cephalotes* (Linné).

Common throughout the forest regions, in enormous colonies. Numerous specimens were taken at Porto Velho, Abuná, and Madeira-Mamoré Camp 41.

140. *Atta sexdens* (Linné).

Many specimens were collected at Natal, Ceará, Independencia, Baixa Verde, Ceará-Mirim, Manaos, and Porto Velho.

This ant (the "sauba" of the Brazilians) ranges throughout the tropical portions of South America, and is by far the most important economically of all ants. It strips many cultivated plants of their leaves, is especially attracted to citrus species. It takes also dried vegetable matter, in particular farina, the staple food of Brazil. At Independencia, back of our house was a large pile of kitchen refuse, and this was visited nightly by hordes of workers, which collected particles of farina, bread, and other vegetable material.

All sizes of workers forage for leaves, generally at night, but also in late afternoons or on cloudy days. The smaller workers of this and the preceding species often ride upon a portion of a leaf which is being carried by a large one and this has given rise to the native belief that the larger workers are blind and are guided by the smaller ones.

141. *Acromyrmex* (*Moellerius*) *landolti* Forel.

Common at Natal and Baixa Verde.

This species was described from a specimen from Colombia, and Forel has since recorded it from Bahia, and Emery from Venezuela. At Natal and Baixa Verde nests were very common. At the entrance is built a turret of grass, from one to six inches in height. Through

this run circular tunnels, which vary in number, from one to eight. From the entrance the tunnel runs perpendicularly to the first fungus-garden chamber. This is about three inches in diameter and from six inches to two feet below the surface. The colonies are rather small. Although on the watch for inquilinous insects I failed to find any spiders in the turrets, as reported by Emery (Ann. Soc. ent. France, 1888, ser. p. 66.) in nests at Caracas.

142. *Acromyrmex* (*Acromyrmex*) *coronata* (Fabricius).

Several colonies were found at Pará.

143. *Acromyrmex* (*Acromyrmex*) *aspersa* (F. Smith).

Common at Natal, Baixa Verde.

144. *Acromyrmex* (*Acromyrmex*) *octospinosa* (Reich).

Numerous workers were found at Itacoatiara.

145. *Acromyrmex* (*Acromyrmex*) *nigrosetosa* Forel.

One colony was found at Souza, near Pará.

146. *Acromyrmex* (*Acromyrmex*) *nigra* (F. Smith).

Several workers are in the collection from Itacoatiara.

147. *Acromyrmex* (*Acromyrmex*) *emiliae* Forel.

A few workers were found at Madeira-Mamoré Camp 39.

This large, opaque form is very distinct from the related species in having no tubercles on the epinotum.

148. *Trachymyrmex diversus*, sp. nov.

Worker. Length 4 mm.

Head, excluding mandibles, a little longer than broad, broader behind than in front, with convex sides, and pointed posterior corners: occipital margin slightly concave. Eyes convex, located in front of

the middle of the sides of head. Mandibles with two large apical teeth and several fine ones basally. Anterior border of clypeus broadly rounded. Lobes of frontal carinae large, flattened, subtriangular, the carinae extending back as strong, converging ridges nearly to the occipital corners of the head. Antennal scapes distinctly thickened apically, extending about one third their length past the occipital corners; funicular joints all distinctly longer than broad. Occipital angles with one large, double spine, and anterior to these several small conical tubercles. Preorbital carinae extending backward toward, but not reaching the occipital corners of the head. Vertex with distinct ridges, which converge posteriorly. Lateral spine of pronotum long and stout, the apex excised to form two blunt tips, the anterior of which is higher than the posterior. Median spines very short, conical. Inferior spine two thirds as long as lateral spines, stout, the apex broadly rounded. Mesonotum with two pairs of lateral, subequal, stout spines, about one third the length of the prothoracic spines, strongly denticulate. Mesoëpinotal constriction rather strongly impressed. Epinotum with subequal base and declivity, meeting at obtuse angle; with a pair of short, blunt spines a little in front of the middle of base; apical spines short and conical. Petiole from above about as broad as long, very abruptly narrowed anteriorly into a short petiole; node with a pair of stout spines. Postpetiole as broad as long, twice as broad as petiole; the posterior border distinctly margined, with a flattened impression anterior to margin and the lateral borders with three strong tubercles, the two anterior short and triangular, the one posterior longer and blunt.

Gaster suboblong, broadest behind the middle; first segment with prominent lateral ridge. Tubercles small, blunt, few in number. Legs long, rather slender, without tubercles.

Mandibles faintly shining, with a few hairs; remainder of body opaque and finely granular.

Hairs ferruginous, sparse, very short, and depressed, except on the ventral surface of gaster, where they are longer and suberect.

Color ferruginous, the antennae and carinae of front and vertex darker.

Described from workers taken on the trunk of a palm at Abuná, Rio Madeira.

Most closely related to *T. oetkeri* Forel from Sao Paulo, but differing in the smaller size of the anterior pronotal spines, which in T. *oetkeri* are much longer than the posterior pair.

149. *Apterostigma branneri*, sp. nov.

Plate 5, fig. 37.

Worker. Length 5 mm.

Near *A. calverti* Wheeler. Head, excluding mandibles one and three fourth times as long as broad, with nearly straight sides, as broad in front as behind. Posterior portion convex, behind contracted into a rather short neck, the sides of which are straight, the posterior angles somewhat prolonged and the border between them truncate. Eyes convex, located a little behind the middle of sides of head. Clypeus twice as long as broad, with rounded anterior border. Mandibles with seven subequal teeth. Frontal carinae in front strongly lobed, behind these becoming very feeble, the posterior portion shorter than the lobes. Antennal scape extending nearly one half its length past the occipital corners, first funicular joint nearly as long as the three succeeding joints together; joints 2–9 broader than long. Thorax elongate. Pronotum with a moderately strong anterior border, which is slightly reflexed. Mesonotum with a pair of subparallel longitudinal ridges. Epinotum with similar ridges extending along base, and to base of declivity. In profile the declivity of the epinotum is nearly straight and about as long as the slightly convex base; the angle between the two surfaces rounded. Petiole from above less than twice as long as broad, sides convex, evenly narrowed anteriorly to the point of insertion. In profile the node is rounded, more than half as high as the length of the petiole. Postpetiole slightly broader than long, broadest a little behind the middle, the sides evenly rounded; posterior border very slightly convex. Gaster elliptical, without a longitudinal ridge on each side. Legs long, rather stout.

Mandibles feebly shining, finely longitudinally striate and sparsely punctate. Funiculus of antennae slightly shining, the rest opaque, very densely punctate.

Hairs abundant, long, suberect, dark at base, lighter towards apex. Pubescence very short.

Color dark brown, funiculus lighter.

Female. Length 5.25 mm.

Closely resembling the worker. The eyes are larger. Mesothorax without longitudinal ridges. Scutellum with two broad, blunt teeth. Base and declivity of epinotum equal, meeting to form an obtuse angle; base with faint parallel ridges. Wings opaque, dark fuscous,

with an elongate black spot between branches of cubital vein. Rest as in the worker.

Male. Length 5 mm.

Head, excluding mandibles about one and one third times as long as broad, rounded at sides, behind more suddenly constricted than in the worker and female. Eyes and ocelli large, very convex. First joint of funiculus one third as long as second; second joint one and one fourth times as long as third; joints 3–11 subequal, two and one half times as long as broad. Prothorax in front constricted; seen in profile depressed; broadly margined. Mesothorax rounded, without longitudinal ridges. Scutellum with broad, flat teeth, as in female. Epinotum, petiole, postpetiole, and gaster similar to these parts in the female.

Pilosity abundant, black, suberect on the head and body, more depressed on the legs.

Wings. Length 4 mm.; fuscous, clouded with darker spots.

Color as in worker and female.

Described from specimens taken from two colonies at Abuná and Madeira-Mamoré R. R. Camp 39. *Apterostigma branneri* approaches most closely *A. calverti* Wheeler from Costa Rica, but *A. branneri* has the head distinctly longer, the pronotum less declivous in front, and without the deep impression posterior to the margin, and it lacks the distinct ridge on the propleurae; the angle between the base and declivity of the epinotum is much more obtuse. Seen in profile, the slope of the epinotal declivity is more gradual. The size of the worker of *A. calverti* is smaller (3.5–4 mm.).

150. *Myrmicocrypta foreli*, sp. nov.

Plate 4, fig. 32–34.

Worker. Length 3.25 mm.

Head, excluding mandibles, about one fourth longer than broad, a little longer behind than in front, with slightly convex sides and concave occipital border, the occipital corners drawn out into thick blunt spines. Front broad and flat. Clypeus with broadly rounded anterior border. Frontal carinae somewhat elevated at base of antennal scape, anteriorly extending outward, almost attaining outer corners of the clypeus; posteriorly very slightly diverging towards occipital border, becoming much weaker at a little less than half the distance from base of scape to occiput. Antennal scapes curved,

thickened at tips, extending one fourth their length beyond the occipital corners. Joints 3–8 of funiculus a little broader than long, gradually increasing in length towards apex; the basal joint of club one half as long as the terminal. Eyes small, located at the middle of sides of head. Mandibles long and rather slender with about seven short teeth on the blade, the penultimate and apical larger than the others. Pronotum concave at middle of front; on the side anteriorly with a sharp, minutely tuberculated crest; the median surface posteriorly with a pair of short, parallel tuberculated ridges, half as far apart as those lateral and anterior, extending half the length of the pronotum with a depression between them and the lateral margin; inferior spine short and acute. Promesonotal impression strong. Mesonotum lower than the pronotum but higher than the epinotum; at sides with a bidentate crest. Epinotum with subequal base and declivity, the latter very abrupt. Base margined with tuberculate ridges, which terminate in spines, which are stout, acute and about half as long as the declivity. Petiole elongate; the node globular, shorter than the distance to point of insertion. Postpetiole twice as broad as petiole, broader than long, sides evenly convex, posterior border truncate. Gaster elongate, broadest in front of apex of first segment. Legs long and stout.

Body and legs subopaque, except the gaster, the first segment of which is shining. Head with very small tubercles arranged in more or less circular patterns on the front. Mandibles longitudinally striate, sublucid. Body everywhere finely granular, with minute tubercles, which are coarser on the petiole, postpetiole, femora, and tibiae, and more scattered on the gaster.

Body, antennae, and legs with thick, short, curved, recumbent, glistening hairs.

Color light ferruginous, the blades of the mandibles darker.

Female (deälated). Length 4 mm.

Head similar to that of worker. Pronotum transverse, flattened above, the sides thinly margined, the margins projecting anteriorly as blunt lateral teeth. Mesonotum slightly rounded above, with a longitudinal pair of denticulated crests at sides and middle and between these a simple carina. The posterior border of scutellum extending into a pair of blunt spines. Epinotum with two long, strong spines at angle of base and declivity, which are equal. The rest similar to worker.

The color is somewhat darker, being light reddish brown.

Described from one female and several workers collected at Madeira-

Mamoré Camp 41. The colony was under a log, about three inches beneath the surface of the earth. A short perpendicular passage led to a single chamber in which was the small fungus garden.

151. *Cyphomyrmex rimosus* (Spinola).

Natal, Baixa Verde, Pará, Manaos, Abuná, Porto Velho, and Abuná, Bolivia.

Occurs in small colonies, beneath stones or in rotten wood. The death feigning instinct is strongly developed and the insect rolls up and remains inert for some time when touched.

Dolichoderinae.

152. *Dolichoderus* (*Dolichoderus*) *decollatus* (F. Smith).

This species occurs commonly throughout the greater part of tropical South America. A large series of workers, collected at Itacoatiara, Porto Velho, and Madeira-Mamoré Camp 39, shows a great deal of variation in color. Some have the head and thorax brownish red, in others these parts are entirely black. These forms are connected, by gradations.

Most of the workers that I observed were on the trunks of high trees. They are slow in motion, and have a habit of remaining motionless for many minutes at a time. When alarmed they drop to the ground.

153. *Dolichoderus* (*Dolichoderus*) *imbecillus*, sp. nov.

Plate 2, fig. 18.

Worker. (Plate 2, fig. 18). Length 10 mm.

Near *D. atellaboides*. Head, excluding mandibles and the neck, longer than broad, with convex sides. Occiput prolonged into a neck which in profile is nearly twice as long as thick and moderately reflexed at the posterior border. Mandibles slender, the blade with ten minute teeth and two larger coarser ones apically. Pronotum as broad as long, rounded above and at sides. Mesothorax similar to that of *D. atellaboides*, long and slender; in front with a small, rounded, elevated portion, on each side of which is a strong impression, extending backward and converging and terminating in

tubercles at the posterior third. Epinotum elevated, in profile a little longer than deep, triangular; apex armed with a pair of strong, slightly curved spines; base and declivity subequal in length, the surface of the former convex, of the latter flat. Petiolar node in profile one and a fourth times thicker than long; from above twice as broad as long; the posterior surface sloping.

Sculpture similar to that of *D. atellaboides,* the head, pronotum, and epinotum sublucid; petiolar node very coarsely and densely rugose; mesothorax shining, less rugose; mesopleurae transversely striate.

Gaster finely punctate and shining. Mandibles punctate. The body, antennal scapes, and legs with rather abundant, erect, stiff hairs.

Color dark reddish brown to black, gaster black, legs lighter. Pile of body and legs grey to white, of antennal scapes, black.

Described from eleven workers taken at Manaos. They were feeding on the exudation of a small shrub along a trail in the forest.

This species is closely related to *D. atellaboides,* but differs in its smaller size and more slender form, the longer neck and petiolar node and the shining gaster. *Dolichoderus rosenbergi* Forel from Ecuador, also has the gaster shining, but the first antennal joint in four times as long as broad (in *D. imbicellus* it is less) and the size is larger (13 mm.).

154. *Dolichoderus* (*Dolichoderus*) *atellaboides* (Fabricius).

Several workers were collected at Abuná, and Madeira-Mamoré Camp 39. It is much less abundant than *D. decollatus.*

155. *Dolichoderus* (*Dolichoderus*) *imitator* Emery.

This is the smallest and most delicate species of the group, and the least common. Five workers were taken at Madeira-Mamoré Camp 39.

The following key serves to separate the Brazilian species of the subgenus Dolichoderus.

Occiput not prolonged into a distinct neck.....1.
Occiput prolonged into a distinct neck.....2.

1. Large, coarse species, epinotal spines long, acuminate; node flattened above, unarmed.....*decollatus* Smith.
Small, delicate species, finely sculptured, epinotal spines very

short; node in profile triangular, acuminate at apex, which is armed with two small teeth..... *imitator* Emery.

2. Color black, petiolar node in profile flat above, twice as long as thick, epinotal spines rounded, slender..... *rugosus* Smith.
   Color, in part, red. Petiolar node in profile less than twice as long as thick, not flat above; epinotal spines somewhat flattened and slightly rugose toward base.....3.
3. Node from above not twice as long as broad; gaster densely punctured and opaque..... *atellaboides* Fabr.
   Node from above more than twice as long as broad; gaster shining.....4.
4. First antennal joint 4 times as long as thick; length 13 mm. (Ecuador)..... *rosenbergi* Forel.
   First antennal joint less than 4 times longer than thick; length 10 mm..... *imbecillus* Mann.

156. *Dolichoderus* (*Monacis*) *bispinosus* (Olivier).

Numerous colonies were found at Pará, Itacoatiara, Porto Velho, and Madeira-Mamoré Camp 39.

This is the commonest, and the most widely distributed species in the genus. It builds carton nests, sometimes of large size, in the branches of trees. The larger of these nests are solidly constructed, similar to certain *termitaria*. I am not certain that some which I examined were not termite nests that had been preëmpted by the ants. When the formicary is disturbed the workers defend it very pugnaciously. They bite hard enough to be disagreeable and the colonies are very populous. I have, on several occasions actually been driven from the near vicinity of a nest by this species.

157. *Dolichoderus* (*Monacis*) *spinicollis* (Latreille).

Workers of this singular species were encountered only once, at Madeira-Mamoré Camp 41. They were found shortly before twilight, moving in a file along a slanting tree-trunk and going up into a tangled mass of vines. Each was carrying in its mandibles a portion of some fluffy, waxy substance. I could not locate the nest, and did not see any more of the ants, though I returned to the same locality several times for further search.

This species is characterized by the very long, acute spines which

project laterally and upward from the sides of the pronotum. The meso- and epinotum each has a stout, triangular spine at the posterior corners, and the node is armed at apex with a slender acuminate spine as long as the node. The whole body is covered with fine yellow pubescence.

158. *Dolichoderus* (*Monacis*) *laminatus* Mayr subsp. *luteiventris* Emery.

A female from Madeira-Mamoré Camp 41 agrees with Emery's description. It measures 5.5 mm. in length. The head, thorax, and petiole are black, and the gaster testaceous, each segment of the latter with a fuscous border. The legs are testaceous.

159. *Dolichoderus* (*Monacis*) *varians*, sp. nov.

Worker. Length 5 mm.

Near *D. lamellosus* Mayr. Head oval, excluding mandibles, a little longer than broad, the sides very convex; occipital angles narrowly rounded, the border narrowly concave. Clypeus flat above, with rounded anterior border. Frontal area very large, triangular. Frontal carinae thin, slightly elevated, extending to opposite posterior third of eye. Eyes small, convex, located in front of sides of head, a little behind the middle. Antennae slender, the scape thickened toward apex, extending a third its length beyond the occipital corners; all the funicular joints longer than broad. Pronotum transverse, broadest in front, the anterior angles drawn out to form acute triangular spines, which are flattened above; anterior border convex at middle, concave at sides; sides sharply but not broadly margined. Mesonotum one and a half times as long as broad, narrowed behind; the surface slightly concave; sides with a narrow elevated margin. Base of epinotum from above triangular, one and a half times as long as broad, sides roundly margined; apical portion transversely depressed and posterior to this elevated into a very thin lamella; declivity a little shorter than the base.

Petiolar node twice as broad as long; in profile twice as high as thick; anterior and posterior surfaces slightly convex, the apex rounded in front, behind elevated into a very thin broad lamella. Gaster short and thick.

Subopaque. Head, thoracic dorsum, and anterior surface of

petiolar node shallowly, densely rugulose. Posterior surface of node and the gaster finely, densely punctate, the latter regularly granulose.

Body thickly covered with short, fine, erect pile. Antennae minutely pubescent.

Color black; antennae and legs ferruginous.

Described from a single worker taken at Porto Velho. In color and general form, as well as in sculpture *D. varians* resembles *D. lamellosus*, from which it differs in the shape of the mesonotum. In the latter species this is transversely oval, while in *D. varians* it is distinctly longer than broad, with a faintly crenulate border. *Dolichoderus varians* is also much more thickly pilose. The other closely related species, *D. laminatus*, has much narrower pronotal spines and finer sculpture throughout.

160. *Dolichoderus* (*Monacis*) *tristis*, sp. nov.

Plate 2, fig. 17.

Worker. Length 4.5 mm.

Head, excluding mandibles, a little longer than broad, narrowed in front, with slightly rounded sides and nearly straight posterior border; occipital corners broadly rounded. Clypeus rounded, the anterior border concave at middle. Frontal carinae nearly straight, subparallel, extending to opposite middle of eyes. Eyes small, feebly convex, located in front of sides of head a little behind the middle. Mandibles short and thick. Antennae short, the scape curved, thickened and flattened toward apex, extending less than one third its length beyond the occipital corners; funicular joints subequal in length, the first constricted at base, joints 3–10 cylindrical, about one and a half times as long as broad; joint 10 as long as broad; apical joint twice the length of penultimate. Pronotum transverse, narrower than head; the short neck transversely depressed; sides convex, acutely margined, the spines short and stout. Mesonotum transverse, sides margined. Epinotum campanulate, unarmed, flat above, the margin projecting laterally and behind; surface of basal portion rounded. Petiole from above transverse; in profile thicker than long, flat above, straight in front, concave behind; the posterior apical border with a short, thick, triangular spine which projects upward and backward; posteroventral surface extended into a triangular process. Gaster short and thick, considerably broader than the thorax.

Subopaque. Head regularly, rugosely punctate, each puncture bearing a short, recumbent glistening white hair. Cheeks and clypeus rugulose. Mandibles shining, coarsely punctured. Antennae densely punctulate. Thoracic dorsum finely punctate; pleurae shining; prothoracic pleurae densely punctate, meso- and epinotal pleurae rugose. Node shining, rugose. First gastric segment densely, irregularly striolate, the striolae longitudinal in front and transverse at the posterior border; remaining segments very densely striolate longitudinally. Legs somewhat shining, punctate.

Thorax and gaster finely pubescent and with scattered erect hairs. Legs sparsely pilose.

Color black; eyes, inner border of mandibles and tarsal joints reddish. Pilosity brownish.

Described from several workers taken at Abuná.

The curious structure of the petiole distinguishes this from the other species of the subgenus.

161. *Dolichoderus* (*Monacis*) *debilis* Emery.

Several workers from Madeira-Mamoré Camp 37 agree closely with cotypes received from Professor Emery.

162. *Dolichoderus* (*Monacis*) *debilis* Emery var. *rufescens* Mann.

The single colony of this very distinct variety was found at Madeira-Mamoré Camp 39, living parabiotically with *Odontomachus affinis* subsp. *mayi*. It differs from *D. debilis* in color, the greater length of the petiolar spines, and the coarse cephalic sculpture.

163. *Dolichoderus* (*Hypoclinea*) *abruptus* (F. Smith).

Many specimens were taken at Porto Velho, Abuná, and Madeira-Mamoré Camp 41. The workers were found most frequently on shrubs, where they attended Membracidae.

164. *Dolichoderus* (*Hypoclinea*) *lugens* Emery.

This species, originally described from Bolivia, swarmed in certain parts of the forest near Porto Velho, and at Abuná, Brazil and Bolivia. It forages on the ground more than do the other species of the genus,

but like the others, nests in trees. The colonies must be very large, judging from the numbers of workers seen together. The workers are able to exude from the anal glands a large drop of a mustard-yellow secretion. This is not, so far as I could ascertain pungent, and it had no effect when applied to my skin.

165. *Dolichoderus* (*Hypoclinea*) *bidens* (Linné).

Taken at Pará, Porto Velho, and Abuná.

166. *Dolichoderus* (*Hypoclinea*) *bidens* (Linné) var. *inferior*, var. nov.

Taken at Itacoatiara and Abuná. This variety is somewhat smaller than typical *D. bidens*, and is light ferruginous in color. The punctation on the vertex is much finer.

167. *Dolichoderus* (*Hypoclinea*) *analis* Emery.

Several workers were taken at Pará and Abuná. It is less common than the preceding species.

168. *Dolichoderus* (*Hypoclinea*) *germaini* Forel var. *garbei* Forel.

Many workers from Ceará and Independencia agree with Forel's description of this variety from Bahia. The head has the sides little convex and much longer than broad; the pronotum is as broad as long. In all of the series the legs are light fuscous and in some of the specimens the thorax is considerably lighter than the rest of the body.

169. *Dolichoderus* (*Hypoclinea*) *ghiliani* Emery.

Plate 3, fig. 19.

Worker. Length 4.5 mm.

Head one and a third times as long as broad, with convex sides, rounded occipital corners and straight border. Clypeus rounded at middle, the anterior border broadly rounded. Mandibles long and thick, the blades finely dentate. Frontal carinae distinct, subparallel, not extending to opposite posterior border of eye. Eyes oval, situated on sides of front, a little anterior to middle of head. Antennae

long and slender, the scape extending one third its length past the occiput, funicular joints 1–7 subequal, cylindrical, nearly three times as long as broad, joints 8–11 a little thicker than the others, apical joint as long as the two succeeding joints together. Pronotum flat, behind, sloping in front, the anterior part considerably narrowed, with margined sides; border between anterior and posterior parts angulate. Mesothorax in front flattened, disc-like; behind sloping into the broad mesoëpinotal impression; the mesothoracic spiracles are large and form distinct tubercles. Base of epinotum longer than the declivity, the surface two and a half times as long as broad, flat and narrowest in front, broadly, shallowly impressed behind, the impressed part acutely margined; posterior border margined, the two margins joining in a prominent, rounded angle; face of declivity rounded. Petiolar node thick, in profile very convex in front, nearly straight behind, the two surfaces separated by a faint margin; the anterior surface rounded, the posterior nearly flat. Gaster elongate and narrower than is usual in the genus. Legs long and slender.

Head, thorax, epinotum, and gaster subshining; seriolately punctulate, devoid of pubescence but bearing sparse, long, erect hairs. Antennae with more abundant and finer, semierect, recumbent pile. Legs finely pilose.

Gaster shining, with sparse, long, erect hairs.

Color light ferruginous, except the gaster, which is piceous.

Described from a single worker taken at Itacoatiara. It is related to *D. lutosus*, but is a more slender species, the epinotal margin is distinctly concave seen from behind, and the head is much longer, with very convex sides, and narrowed behind, and not concave at the border.

170. *Dolichoderus* (*Hypoclinea*) *championi* Forel var. *ornatus*, var. nov.

Worker. Length 6 mm.

Near *germaini*. Head elongate oval, with convex sides and feebly concave occipital border, the angles evenly rounded. Clypeus flattened at middle, anterior border straight. Mandibles as in *D. germaini*. Eyes nearly circular, located at sides of front anterior to middle of head. Antennae slender, the scape bisinuate, extending one third its length past the occipital border; funicular joints all distinctly longer than broad, the first three times, the others about twice. Pronotum flattened, a little longer than broad, the sides rounded in

contour and feebly margined. Mesonotum oval, about one and one half times as long as broad, in profile gently rounded from base to the mesoëpinotal impression, which is broad and deep. Epinotum more than twice as long as broad, with the base a little longer than the declivity; in profile the base is rounded, the declivity slightly convex; the surface of the base is convex, except at the apical end, where there is a narrow shallow transverse impression, posterior to which is a slightly elevated margin; the basal surface is flat. Petiolar node thin, in profile convex in front, concave behind, the apex thinly margined; the margin not extending down the sides.

Head shining, minutely, closely punctate, thinly covered with short, suberect pile; antennae thinly pilose; mandibles punctate and pilose.

Thorax, epinotum, and petiole somewhat shining, punctate, similar to but more coarsely than the head, and more thinly pilose; the posterior surface of the node with fine transverse striolae and glabrous, except for several long hairs at the apex. Thorax shining, minutely punctate, thinly pilose.

Color black, except the legs, petiolar node, base of first gastric segment and interrupted bands at the apices of the first and second segments which are yellow. Apex of femora, tibiæ and tarsi slightly infuscated. Pile gray.

Female. Length 8 mm.

Head elongate oval, distinctly longer than broad, in general similar to that of the worker. Ocelli large and distinct, arranged in a triangle. Mesonotum flat behind, the sides with a low, rounded margin. Scutellum flat. Epinotum similar to that of the worker, but the base is much shorter in proportion to the declivity, slightly longer than broad. Petiole as in worker. Gaster longer and more slender.

Head and pronotum with foveate punctation, the punctures shallow and widely separated.

The color is the same as in the worker, except for the mandibles and a transverse stripe across the clypeus, which are rufous. The tibiae, tarsi, and tips of the femora are darker than in the worker. Wings very slightly infuscated, veins pale brown. Pilosity as in worker.

Described from large series of workers from Pará and Abuná. This is a singularly colored variety, quite different from any of the described forms. In the Pará specimens the surface of the epinotal declivity is yellow, and in those from Abuná it is black. Otherwise the two are identical.

171. *Dolichoderus* (*Hypoclinea*) *lutosus* (F. Smith).

Plate 3, fig. 20.

Several colonies, nesting beneath stones were found at Natal and Baixa Verde. Those from the latter locality are small in size (length 3.5 mm.) and are evidently from an incipient colony. A figure of the worker is given in Plate 3, fig. 20.

Female. Length 6 mm.

Ocelli very small, arranged in an equilateral triangle. Base of epinotum shorter than declivity.

Color similar to that of worker but more pronounced. First three gastric segments with a median longitudinal fuscous line; apex of first segment with a narrow transverse fuscous band; apical two thirds of the second and border of the third segments fuscous. Wings hyaline; veins and stigma brown.

Male. Length 3.75 mm.

Head, excluding the mandibles, as long as broad, convex behind and at sides, with large, moderately convex eyes, which occupy about half the sides. Frontal area distinct, triangular; carinae fine. Clypeus convex at middle, broadly concave at middle of anterior border. Mandibles well developed, stout, as long as the distance from their base to the eye, blade with several fine teeth anteriorly. Vertex elevated into a broad tubercle on which the large ocelli are located; in front of this, beneath the median ocellus the front has a deep, triangular impression. Antennae short, extending to base of gaster; first funicular joint a third the length of the second. Thorax robust, mesonotum evenly rounded above, with feeble Mayrian furrows. Epinotum short, base rounded, declivity flat, the two surfaces separated by an obtuse angle. Petiole twice as high as thick, anterior surface rounded, posteriorly nearly flat, the apex narrowly, thickly margined. Gaster similar to that of worker, but flattened above. Genitalia small. Hypopygium small, broadly triangular. Cerci very small. Legs slender. Wings long and narrow.

Body shining, very minutely punctate. Mandibles punctate, with several long hairs. Body without long hairs. Thorax and abdomen with sparse, regular, very minute scale-like white hairs. Funiculus densely pubescent.

Color dark fuscous, gastric segments at base lighter.

172. *Azteca schumanni* Emery subsp. *dubia*, subsp. nov.

Plate 2, fig. 15.

Worker major. (Plate 2, fig. 15). Length 2 mm.

Head subquadrate, one and a third times longer than broad, slightly narrowed in front, with feebly convex sides, broadly rounded occipital corners and narrowly excavated border. Clypeus convex, the anterior border broadly bisinuate. Antennal scapes extending about two thirds the distance to occipital corners; strongly arcuate and thickened toward apex; funicular joints 5–10 as broad as long. Eyes at sides of head, well in front of the middle. Pro- and mesothorax as in *A. schumanni*. Epinotum in profile rounded; the posterior portion of base flattened. Node in profile twice as high as thick, evenly rounded above. Antennal scapes and tibiae without erect pile.

Head, thorax, and abdomen with fine, long, appressed pubescence and sparse, short, erect hairs.

Color fuscous, thorax lighter, gaster darker.

Worker minor. Length 2 mm.

Head longer than broad, the width at occiput equal to that at clypeus; sides slightly convex, posterior border very feebly concave. Clypeus convex, the anterior border truncate at middle, slightly produced and rounded at corners. Eyes small, located in front of sides anterior to middle of head. Antennal scapes extending about two thirds the distance to occipital corners, funicular joints 6–10 as broad as long. Thorax and epinotum similar to that of the worker major, but the latter is somewhat flatter. Node and gaster as in the worker major.

Subshining, finely punctate. Body above with sparse, short pile and pubescence. Antennae and legs pubescent, without erect pile.

Color fuscous.

Male. Length 3.5 mm.

Head about as long as broad; sides and posterior border convex. Mandibles slender, acuminate. Anterior border of clypeus rounded. Eyes rather large and convex. Ocelli prominent, the lateral ones situated at opposite ends of a transverse elevated tubercle, which is rounded in front and behind. Antennae short and stout; first and second joints subglobose, transverse, the second the longest; third joint one and a half times longer than broad, very much thickened; joints 4–6 distinctly longer than broad, joints 7–12 proportionately shorter; apical joint one and a half times as long as penultimate.

Thorax robust, the anterior surface of the pronotum declivous in profile. Petiole and gaster similar to those of the worker minor.

Body and legs without erect pile, sparsely pubescent. Antennae, excepting the first two joints, very densely covered with rather long, erect pubescence.

Color black, legs and antennae dark fuscous. Wings hyaline. Veins and stigma fuscous.

Described from four major workers, three minors, and a male from Itacoatiara. This form differs from the typical *A. schumanni* in not having erect hairs on the antennal scape, the head is less narrowed in front, and the clypeus is not depressed at the middle. *Azteca schumanni* var. *taediosa* Forel is more robust and has the head less excavated behind and the antennal scapes longer.

173. *Azteca mülleri* Emery subsp. *terminalis*, subsp. nov.

Plate 2, fig. 16.

Worker major. Length 4 mm.

Head, excluding mandibles, as broad as long, narrowed in front, with strongly convex sides, especially opposite the eyes, narrowly rounded occipital corners and deeply excavated border. Clypeus convex, the anterior border straight, except at corners, where it is slightly produced and rounded. Mandibles thick, with six strong teeth. Antennal scapes barely extending to occipital corners. Mesonotum in profile evenly rounded. Epinotum with subequal base and declivity, the former broadly flattened. Node rather low, rounded above. First segment of gaster depressed in middle at base.

Shining, densely punctate throughout. Pubescence abundant, long and recumbent. Pile of the scapes sparse and short, that of the body longer.

Color very dark fuscous; terminal half of antennae yellow, the color becoming more intense at apex.

Described from a series taken at Madeira-Mamoré R. R. Camp 39. The broadly flattened epinotum and the peculiar coloration of the antennae distinguish this subspecies. It is evidently close to var. *A. nigella* Emery from southern Brazil, but is larger and differently colored.

174. *Azteca aurita* Emery subsp. *silvae* Forel.

A single colony of this distinct subspecies was found at Pará, the type locality.

175. *Azteca velox* Forel var.

Colonies were found at Manaos, Abuná, Porto Velho, and Madeira-Mamoré R. R. Camps 39 and 41. There is considerable variation in the amount of infuscation on the vertex.

176. *Azteca angusticeps* Emery.

A single deälated female from Itacoatiara agrees closely with Emery's figure and description of this species.

177. *Azteca alfaroi* Emery var.

Several workers of a variety of this species were taken at Abuná. These are very close to var. *A. aequilata* Forel, but the sides of the head are more convex.

178. *Azteca trigona* Emery.

Numerous workers were taken at Manaos and on the Rio Madeira at Camps 35, 39, 41, 43, Porto Velho, and Abuná.

179. *Azteca trigona* Emery subsp. *mathildae* Forel.

This was the most abundant Azteca on the Rio Madeira. Specimens were taken at Abuná, Porto Velho, and Madeira-Mamoré R. R. Camp 43. At Itacoatiara many colonies were nesting in high, buttressed trees near the river bank.

180. *Azteca trigona* Emery subsp. *mathildae* Forel var. *spuria* Forel.

A number of colonies, in small carton nests, six or eight inches in length, were found at Ceará-Mirim. Other colonies of a variety identical with this were found at Abuná on the Rio Madeira. The latter attend Coccidae of several species, over which they build sheds. The coccids which I observed were on small bushes near the trees on which the formicaries were built. The ants energetically defended the sheds and the Coccidae.

181. *Azteca barbifex* Forel.

Very abundant at Abuná and Madeira-Mamoré Camps 28, 39 and 41. The type specimens are from the Rio Purus and the species is probably widely distributed throughout the upper Amazonian region.

182. *Azteca chartifex* Forel var.

Several workers of a variety of this species were taken at Abuná.

183. *Azteca fasciata* Emery var. *similis*, var. nov.

Minor and major workers from colonies found at Madeira-Mamoré Camps 39 and 41 differ from Emery's description and figure of *A. fasciata* from Santarem in color and in having the antennal scape noticeably longer. In the smaller worker of *A. fasciata* it extends barely past the occipital corners while in *A. similis* it exceeds these corners by a full third of its length. In *A. similis* the larger workers have the head, pronotum, anterior femora, and antennal scapes red, and the rest of the body dark fuscous. The smaller workers have the vertex, and part of the pronotum infuscated. In other characters it agrees closely with typical *A. fasciata*.

184. *Azteca lanuginosa* Emery subsp. *pruinosa*, subsp. nov.

Worker. Length 3.5 mm.

Head, excluding mandibles, as broad as long, appreciably narrowed in front, with strongly convex sides, narrowly rounded occipital corners and shallowly excavated border. Clypeus convex, the anterior border bisinuate, projecting and rounded at middle. Mandibles with a thick, blunt subapical tooth and five small teeth on the blade. Antennal scapes in the largest workers barely attaining the occipital corners, in the smaller ones slightly surpassing them. Mesonotum very convex and elevated. Mesoëpinotal suture strongly impressed. Node in profile deeper than thick, evenly rounded above.

Mandibles subopaque, densely striolate longitudinally. Head, thorax, and abdomen subopaque, finely, densely punctate.

Head and body evenly covered with fine pruinose pubescence. No erect hairs present, except a very few on the gaster.

Color dark fuscous; clypeus, antennal scapes and legs lighter.

Described from a number of workers taken at Abuná. This form is less shining than *A. lanuginosa*, the pubescence is more abundant and is closely appressed and not lanuginose in character. Otherwise the variety agrees with the typical form.

185. *Dorymyrmex pyramicus* (Roger).

Many workers were found at Natal, and Itacoatiara. In the yard of our house at Natal this and the succeeding variety were very abundant, in small crater nests.

186. *Dorymyrmex pyramicus* (Roger) subsp. *flavus* McCook.

Very common at Natal. This and the preceding have a wide distribution, ranging from Illinois in the United States to Argentina. Strangely, in spite of the adaptive nature of this ant, it has not spread out of the Americas.

187. *Tapinoma melanocephalum* (Fabricius).

Many specimens of this common tropicopolitan species were found at Pará and Porto Velho.

CAMPONOTINAE.

188. *Brachymyrmex coactus* Mayr.

One colony was found at Independencia, nesting in a twig.

189. *Brachymyrmex admotus* Mayr.

One colony was taken at Ceará-Mirim.

190. *Brachymyrmex pictus* Mayr.

Taken at Pará and Manaos.

191. *Myrmelachista* (*Decamera*) *bambusarum* Forel.

Workers taken at Itacoatiara agree with Forel's description of this species from Sao Paulo. The type specimens were nesting in bamboo.

192. *Gigantiops destructor* (Fabricius).

Found commonly at Pará, Abuná, Porto Velho, and Madeira-Mamoré Camps 39 and 41. In life this was one of the most

attractive ants encountered. It lives always in the forest, where it forages either among the branches of trees or on the ground. The movements of the foraging worker are rapid, comparable to those of some of our species of Cicindela, and the bicolored antennae are kept constantly in motion.

The female is very similar to and scarcely larger than the biggest worker and the eyes and ocelli are equally well developed in both.

193. *Prenolepis* (*Nylanderia*) *longicornis* (Latreille).

Santarem, Natal, and Maranhao.

194. *Prenolepis* (*Nylanderia*) *vividula* (Nylander).

Several colonies were found at Pará.

195. *Prenolepis* (*Nylanderia*) *fulva* Mayr.

Itacoatiara.

196. *Prenolepis* (*Nylanderia*) *steinheili* Forel.

Independencia.

197. *Camponotus* (*Myrmoturba*) *maculatus* (Fabricius) subsp. *fusco-cinctus* Emery.

Several workers and females were found beneath bark at Natal.

198. *Camponotus* (*Myrmoturba*) *maculatus* subsp. *fryi*, subsp. nov.

Plate 6, fig. 52.

Worker major. Length 10 mm.

Close to subsp. *C. spengleri* Forel. Head a little longer than broad, truncate behind, with broadly rounded posterior corners and slightly convex sides. Clypeus strongly carinate; the anterior border notched at middle. Cheeks in front broadly rounded. Thorax and petiolar node in profile thicker than in the other forms of *C. maculatus*, the anterior face of the latter very convex. The front and vertex are

sparsely punctate, the punctures comparatively coarse. Pubescence is lacking and pile sparse.

Color brown, the head darker; the basal parts of gastric segments are transversely banded with light ferruginous.

Described from a single specimen taken at Madeira-Mamoré Camp 39. This subspecies is distinguished from the others by the thicker thorax and petiolar node and the very sparse pile.

199. *Camponotus* (*Myrmoturba*) *maculatus* subsp. *abunanus*, subsp. nov.

Plate 6, fig. 44.

Worker major. Length 7 mm.

Head, excluding mandibles, longer than broad, narrowed in front, with convex sides; posterior border excised, straight at middle, the angles prominent, and clypeus longer than broad, very broadly carinate at middle, the anterior border bilobed. Mandibles stout, with five rounded teeth. Antennae slender, the scapes barely reaching to occipital corners of the head. Thorax slender; pronotum distinctly longer than broad. Epinotum from above four times as long as broad; in profile slightly rounding from base to declivity, the two surfaces joining in a broadly rounded angle. Petiolar node wedge-shaped in profile, the anterior surface rounded, the posterior nearly flat; seen from behind its margin is evenly rounded. Legs short; the tibiae not compressed.

Subshining; very finely shagreened, the head and pronotum less so than the rest. Mandibles sublucid, with fine punctures and few short hairs. Front with a few coarse superficial punctures. Pubescence of the head very minute, sparse, and scale-like; a few short erect hairs on the front and occiput. Thorax and abdomen with silky pubescence, which is most abundant on the gaster. Pile long and sparse on the thorax, shorter and abundant on the gaster.

Color testaceous; mandibles, antennal scapes (except tip), tarsi, and a narrow transverse band at the apex of each gastric segment dark fuscous. Pile and pubescence yellow.

Described from two major workers from Porto Velho. Possibly this should be considered a distinct species. The occipital angles of the head are unusually narrow, the clypeus more deeply notched and the antennal scapes are shorter than in the other forms of *C.* (*M.*) *maculatus*.

200. *Camponotus* (*Myrmoturba*) *melanoticus* Emery var. *substitutus* Emery.

Numerous workers were found at Natal, Independencia, and in the Maranguapé Mountains. The species nests beneath stones.

201. *Camponotus* (*Myrmothrix*) *rufipes* (Fabricius).

The typical form of this species was common, nesting in logs and beneath bark, at Ceará-Mirim, Pará, and Porto Velho.

202. *Camponotus* (*Myrmothrix*) *abdominalis* (Fabricius).

Very common at Natal, Ceará-Mirim, Baixa Verde, Pará, and Madeira-Mamoré Camps 39 and 46.

203. *Camponotus* (*Myrmothrix*) *abdominalis* var. *atriceps* F. Smith.

A single colony was taken at Abuná, Bolivia.

204. *Camponotus* (*Myrmothrix*) *rapax* (Fabricius).

Plate 5, fig. 38.

Worker major. (Plate 5, fig. 38). Length 12 mm.

Head one and a third times longer than broad, narrowed in front, posterior angles narrowly rounded, occipital border narrowly and rather deeply concave; the sides straight and subparallel until a little in front of middle, then convergent. Mandibles large, elongate, with six teeth on the blade. Clypeus a little broader than long, attaining side margin of head, strongly carinate, the anterior border of middle convex. Frontal area distinct, quadrangular. Frontal carinae evenly curved from base to end, which is opposite the middle of eye. Eyes small, rather flat. Antennae slender, the scapes bent at middle, extending three eighths their length beyond the occipital corners; funicular joints long and cylindrical, gradually decreasing in length apically. Pronotum broader than long, rounded at sides and above, in front finely margined. Mesonotum slightly longer than broad, narrowed behind, the base slightly less than twice the breadth of posterior portion. Epinotum at base divided by a distinct transverse suture; evenly rounded in profile; narrow above, three times as long as broad.

Petiolar node from above transverse, rounded at sides and in front; in profile narrow, two and one half times higher than thick, rounded at apex, the posterior surface nearly straight, the anterior slightly more convex. Gaster elongate egg-shaped. Legs long and slender.

Subopaque, the whole body finely shagreened, somewhat more coarsely on the head and more finely on the petiolar node. Mandibles coarsely punctate and sparsely setose. Antennal funiculus coarsely punctate.

Body with long, recumbent, silky, glistening hairs and very long erect pile. The appressed pubescence is most abundant on the gaster, thoracic pleurae, and head and absent from the petiolar node. Legs with short semidepressed hairs, femora sparsely beset with long stiff hairs. Antennal funiculus pubescent; scape with short semidepressed and sparse, longer, erect, stiff hairs.

Color black except a transverse reddish brown patch on the occiput and the dorsum of the gaster, which is light ferruginous. Pubescence yellow, pile brown.

Worker minor. Length 10 mm.

Head twice as long as broad, as broad in front as behind, with slightly convex sides and narrowly rounded occipital border. Antennal scapes extending nearly two thirds their length past the occipital borders. Thorax shaped much as in worker major. Posterior surface of petiolar node shallowly impressed at middle.

Sculpture, pilosity, and color much as in worker, but the head is entirely black.

Described from one worker major and a series of minor workers from Porto Velho and Madeira-Mamoré Camps 39 and 41. This distinct species is generally distributed throughout the Amazon region and the northern parts of South America, but it is not common locally.

205. *Camponotus* (*Myrmothrix*) *leydigi* Forel.

Workers were found on tree trunks at Independencia and Manaos.

206. *Camponotus* (*Myrmothrix*) *wheeleri*, sp. nov.

Plate 6, fig. 49–51.

Worker major. (Plate 6, fig. 50). Length 12 mm.

Head very large, nearly as broad as long, narrowed in front, with slightly convex sides, elongate, narrowly rounded occipital corners

and sharply truncate posterior border. Eyes small, slightly convex. Mandibles small, short, with four coarse teeth. Clypeus about as broad as long, carinate, the anterior border broadly concave. Frontal area distinct. Frontal carinae more approximate in front than behind. Antennae short and slender, the scapes curved, extending one eighth their length past the occipital corners; funicular joints 1–3 subequal, more than three times as long as broad, joints 4–6 subequal, slightly shorter than the first three, the rest of the joints still shorter and subequal in length. Pronotum one half as broad as the head, the anterior border and the front of sides with a rounded carina. Meso- and epinotum in profile evenly arched above; from above, rounded at sides. Petiolar node in profile about as thick as long, moderately convex in front, nearly straight behind; from above as broad as long, evenly rounded in front and behind. Legs very long, the tibiae and metatarsi broad and very much depressed.

Sublucid throughout, the whole body finely shagreened, more coarsely on the head; with a covering of silky, recumbent pubescence, which is less abundant on the head, pro- and mesonotum, and the petiolar node; with long, stiff, erect hairs on the head, thorax, gaster, and legs; the head in addition bears shorter, suberect hairs.

Body and legs black, the gaster on account of the dense, silky pubescence has a yellow sheen; head reddish brown, the antennal scapes black. Pubescence and short fine pile yellow; coarse hairs black.

Worker minor (Plate 6, fig. 49, 51). Length 9 mm.

Head a little longer than broad, narrowed in front, the sides nearly straight; occipital corners broadly rounded; posterior border straight. Clypeus with straight, projecting anterior border. Antennae long, the scapes extending three fourths their length past the occipital corners of the head. Thorax and petiole similar to that of worker major. Legs as in worker major.

Sculpture, color, pile, and pubescence as in worker major, but the pubescence of the gaster is somewhat finer.

Described from a small series which was collected at Madeira-Mamoré Camp 41. The ants were nesting in a hollow palm tree and it was necessary to smoke them out. Their movements in life were very active.

The peculiar shape of the thorax, the strongly flattened long legs and the color are very distinctive.

207. *Camponotus (Myrmamblys) burtoni*, sp. nov.

Plate 6, fig. 45, 46.

Worker maior. Length 6 mm.

Head, excluding mandibles, longer than broad, broadest at occiput; posterior corners narrowly rounded, the border slightly convex; sides in front of eyes straight. Head in profile two thirds as thick as long. Clypeus a little broader than long; anterior border narrowly rounded at middle; surface very convex, with a strong carina at middle. Frontal carinae weak, extending to opposite the anterior border of eyes. Eyes small, convex, situated on sides back of posterior third of head. Antennae long and slender, scape extending half its length past the occipital corners, funicular joints long, cylindrical. Mandibles short and thick, the blade with four teeth. Pronotum twice as broad as long, the surface rather flat, sides nearly straight; anterior angles evenly rounded; sides and anterior border with a rounded margin. No mesoëpinotal suture; the mesoëpinotum rounded above, then declivous to base, in profile twice as high as thick. Node wedge-shaped, twice as deep as thick, the anterior and posterior surfaces feebly convex; narrowly rounded above.

Sublucid, head, thorax, and abdomen very densely, transversely, striolately punctate, with long silky pubescence, which is rather sparse except on the front of head and the pronotum, and abundant, stiff, erect pile, which is very long. Node without pubescence but bearing several long hairs at the apex. Antennae pubescent, devoid of pile. Femora and tibiae sparsely pilose.

Color black; mandibles and scape rufous. Pile and pubescence white.

Described from three workers taken at Madeira-Mamoré Camps 39 and 41.

208. *Camponotus (Myrmamblys) novagrenadensis* Mayr.

Two major workers were taken at Abuná.

209. *Camponotus (Myrmamblys) claviscapus* Forel.

Many major and minor workers of this species, from Natal and Ceará-Mirim, agree closely with Forel's description of the types, which were from Trinidad.

210. *Camponotus* (*Myrmobrachys*) *adpressisetosus* Forel.

Plate 6, fig. 48.

Worker major. (Plate 6, fig. 48). Length 9 mm.

Head, excluding mandibles, longer than broad, with narrowly rounded occipital corners and concave border; sides nearly straight and subparallel for half their distance from occiput to anterior border, then convex and convergent. Clypeus longer than broad, strongly keeled at middle, the sides straight and parallel; anterior border broadly concave at middle. Frontal area distinct, elongate, triangular. Frontal carinae extending to nearly opposite the posterior borders of eyes. Eyes small, very flat, located in front of sides behind the middle. Mandibles 4-dentate. Antennae short, slender, the scapes curved, extending three fourths the distance to occipital angles, funicular joints cylindrical, joints 2–10 subequal. Pronotum transverse, sides evenly rounded, surface slightly convex. Mesonotum flat above, a little broader than long, evenly rounded at sides. Mesoëpinotal suture faintly impressed. Epinotum from above three times as long as broad; evenly rounded above and at sides, without distinct base and declivity. Petiolar node twice as high as thick, rounded in front, nearly straight behind, above narrowly rounded. Gaster short and stout, oval. Legs long, tibiae moderately depressed.

Subopaque, very finely shagreened throughout, with a covering of fine silky pubescence, which is a little more abundant on the gaster and thorax than on the head. The head bears short, stiff suberect hairs, in addition to much longer erect hairs. The latter are present also on the thorax and gaster, where they form a long brush on the epinotum and the apex of node. Antennae without pubescence or pile. Mandibles subshining, finely punctate, with sparse, short hairs. Legs with sparse, fine recumbent hairs; without erect hairs.

Color black; antennae and mandibles brown, recumbent pile and pubescence golden.

Worker minor. Length 7 mm.

Head, excluding mandibles, longer than broad, narrowed in front, with slightly convex sides, broadly rounded posterior corners and straight occipital border. Clypeus as broad as long, strongly keeled at middle. Mandibles 7-dentate. Antennal scapes extending half their length past the occipital corners. Eyes large, moderately convex, located at posterior third of head. Thorax much as in major worker, but the mesoëpinotal suture less impressed. Rest as in worker major.

Many workers were taken at Ceará-Mirim, Natal, and Maranhao, from nests beneath stones.

211. *Camponotus* (*Myrmobrachys*) *crassus* Mayr.

This was the commonest of the genus on the east coast, where many workers, females, and males were taken at Natal, Ceará-Mirim, Baturité Mountains, and Maranhao.

212. *Camponotus* (*Myrmomalis*) *depressus* (Fabricius).

Plate 5, fig. 42.

Taken at Abuná, Bolivia and Madeira-Mamoré Camp 39. This is one of the most singular ants, on account of its very elongate, flat body and the extremely long legs. The few workers which I observed were running about on leaves.

213. *Camponotus* (*Myrmepomis*) *sericeiventris* (Guérin).

Abundant on the Rio Madeira at Abuná and Camps 39 and 41.

Some years ago Mr. E. J. Newcomer gave me a live worker major of this species which was found in a restaurant at Palo Alto, California, having no doubt been imported with bananas from Central America.

214. *Camponotus* (*Myrmorhachis*) *latangulus* Emery.

Workers from Pará, Manaos, and Madeira-Mamoré Camp 39 are a trifle lighter in color than a series from Peru, but are otherwise identical.

215. *Camponotus* (*Myrmeurynota*) *heathi*, sp. nov.

Plate 5, fig. 40, 41.

Worker major. (Plate 5, fig. 41). Length 5.5 mm.

Head nearly as broad as long; sides straight from occipital corners to three fourths the distance to anterior border, then concave; rounded anteriorly. Occipital corners broadly rounded, the margin nearly straight. Frontal carinae narrow, not much elevated. Frontal area broad, slightly convex, anteriorly as broad as the base of clypeus,

with faint longitudinal impression. Clypeus small, longer than broad, anterior border truncate, strongly carinate at middle and depressed on either side. Mandibles short and thick; bluntly dentate. Eyes small, oval, rather flat, situated much posterior to middle of sides of head. Antennae short, stout, the scape strongly inflexed, thickened at apex, barely extending to occipital corners; funicular joints thick, subequal. Pronotum as broad as long, constricted in front, the sides margined, anterior border strongly margined. Sides at middle straight, in front concave to apex, with an angle between; narrowed and rounded at base. Promesonotal impression distinct. Mesonotum triangular, rounded at sides, and slightly rounded above. Epinotum rounded at sides; at base with a large projection, which, seen from the front, has straight sides and truncate apex; from the sides this is seen to be composed of two tubercles, the one in front about half as large as the other. From the apex of this spine the epinotum in profile is concave to a point a little less than half the distance to base, where it is armed with another projection. In profile the anterior surface of this is convex, the posterior concave. This projection is twice as high as the one anteriorly and at the apical end bifurcate into two conical spines. From this to the marginate base the epinotum is concave. Petiolar node in profile thick at base and at about one third the distance from base to apex strongly constricted; apex and sides thinly marginate, the middle and the apex of sides with conical projections; anterior surface rounded, posterior deeply concave. Gaster elongate, sides slightly convex, the width of the first three segments subequal. Legs long, rather stout.

Head and thorax subopaque, minutely and densely punctate, the punctures on mesonotum and epinotum coarser. Head and pronotum with very sparse pubescence and very sparse, scattered semierect pile. Mandibles shining, with coarse punctures. Antennae finely pubescent, the apex of scape with a few erect hairs. Posterior surface of node coarsely striolately punctate, surface granular in appearance. Gaster subopaque, densely punctate, with scattered pubescence and a few erect hairs. Tibiae with sparse recumbent pubescence, but legs otherwise without hairs.

Gaster above dark brown to black, each segment with a narrow apical border of yellow; rest of body and legs ferruginous, tibiae, tarsi, and antennae somewhat darker. Pile and pubescence gray.

Worker minor. (Plate 5, fig. 40). Length 4.5 mm.

Head narrowed anteriorly; sides in front of eyes slightly convex to the anterior border, which is rounded; occipital corners very

broadly rounded; occipital margin straight. Frontal carinae well elevated in front; frontal area convex. Clypeus rounded in front, longitudinally carinate at middle. Mandibles thick, the blade with five teeth. Eyes oval, convex, located at middle of sides of head. Scape of antennae extending nearly half its length beyond occipital corners, slightly bent, and thickened at apex; joints of funiculus subequal in length, each about twice as long as broad. Pronotum convex, one and one half times as broad as long, broadest in front; anterior border convex, posterior concave; sides in front broadly margined, the anterior corners laminate. Mesonotum obliquely flattened at sides, carinate at middle; the carinae, at junction of meso- and epinotum extended into a long projection which is bent backward and flattened at apex. At the base of the pronotum, on the sides is a small, but distinct tubercle. Epinotum carinate at middle; the sides very oblique. Slightly posterior to middle of epinotum is a second projection, longer than the first, and thicker at base; seen in profile this is bent backward; it is tuberculate on the front surface at a little less than half the distance to apex. The apex is deeply bifurcate for nearly one half the length of spine. From the base of this projection the epinotum is concave to base. Node of petiole, seen in profile, longer than high; seen from behind about as thick as high. The apex slightly margined, with three long, acuminate spines, one at apex, and others at middle of sides. Posterior surface of node flattened. Gaster elongate, sides slightly convex. Legs long, rather stout.

Head, thorax, and epinotum subopaque, finely punctate. The punctures are very dense on the head and pronotum, giving these portions a velvety appearance. Head and pronotum with regular, recumbent pubescence, the head with a very few short, erect hairs. Antennae sparsely pubescent. Surface of posterior declivity of petiolar node granular. Gaster densely, minutely punctate, with thin pubescence and sparse, short erect pile. Legs sparsely hairy.

Head above fuscous; each occipital corner with a ferruginous blotch that extends in front of and beneath eye. Front of head, from a short distance beneath insertion of antennae yellow. Mandibles light ferruginous. Antennae fuscous, the scape at basal half ferruginous. The apical border of first gastric segment, the remaining segments of gaster and the apices of tibiae fuscous, rest of body and legs ferruginous. Pile and pubescence white.

Porto Velho, Abuná, and Camp 39 on the Madeira-Mamoré R. R. The specimens were found running about on leaves.

The subgenus Myrmeuryota includes the species which have the meso- and epinotum armed with spines. Of the nine known species, all excepting *C.* (*M.*) *heathi* and *C.* (*M.*) *eurynotus* Forel are West Indian. The latter species, described from a worker minor from Tonantins in Brazil has the pronotum much broader than in *C.* (*M.*) *heathi*, the epinotum is different and the petiolar node is not spinose. Like *C.* (*M.*) *cristophei* and *C.* (*M.*) *toussainti*, which I found on leaves and tree trunks in Hayti, *C.* (*M.*) *heathi* is probably an arboreal species.

I have much pleasure in dedicating this extraordinary species to my former professor, Dr. Harold Heath, a member of the Stanford Expedition and my companion on many collecting trips.

216. *Dendromyrmex traili* May. *rufogaster*, var. nov.

Several specimens in the Wheeler collection from Bolivia (Staudinger) differ from Mayr's description in having the gaster chestnut red, instead of black. In other characters these agree well with the description, and should, I think be considered a distinct variety of *D. traili*.

217. *Dendromyrmex nidulans* Smith.

One specimen, referable to this species, taken at Camp 39, Madeira-Mamoré R. R. *Dendromyrmex nidulans* most closely approaches *D. fabricii* Roger but has not a dense mat of pubescence on the gaster.

218. *Dendromyrmex fabricii* Roger.

One worker from Pará.

219. *Dendromyrmex chartifex* Smith var. *felis*, var. nov.

The worker of this variety differs from the typical form in being subopaque instead of shining. The whole body is more hairy. The dense pubescence on the gaster gives it a velvety appearance. The color is yellowish brown.

Female (deälated). Length 10.5 mm.

Head small, sides in front of eyes almost straight, curving slightly towards base of clypeus; sides behind eyes convex to posterior margin, which is slightly concave. Clypeus broad, carinate, the anterior

border truncate. Mandibles with six teeth. Eyes small, situated posterior to middle of sides of head. Ocelli small. Frontal lamellae elevated; enclosed area very slightly impressed at middle. Antennae about two thirds as long as body. Pronotum narrow, anterior border with raised margin which extends part way along the sides. Mesonotum much elevated, declivous in front, flattened above, with faint indications of margin at sides. Epinotum rounded above and at sides, margined at base. Node as in worker. Gaster ovate. Legs long and slender.

Head, thorax, epinotum, and node subopaque, densely, finely punctate, minutely striolate transversely, with very sparse pubescence, but with abundant, semierect pile.

Gaster subopaque, densely punctate and striolate, both punctures and striae being extremely minute. The pubescence is very sparse and fine; the pile erect, not abundant.

Scape of antennae and legs with many erect hairs; funiculi pubescent.

Color as in worker.

Described from several workers and a female taken at Tumatumari, British Guiana (Amer. Mus. Nat. Hist. collection).

220. *Dendromyrmex chartifex* subsp. *mamoreënsis*, subsp. nov.

Worker. Body much more robust than in the typical form of the species. Head constricted behind the eyes, sides convex, occipital border with edge rounded, without trace of margination. Sides of head in front of eyes evenly convex, narrowed toward base of clypeus. Clypeus strongly carinate. Mandibles with six teeth on the blade. Surface of frontal area convex, longitudinally carinate at middle. Antennae nearly as long as body, rather thick. Pronotum nearly as broad as long, depressed, and broadly margined anteriorly; seen in profile, the surface is convex; sides distinctly margined for three fourths the distance to promesonotal suture. Mesonotum slightly convex above, rounded at sides. Epinotum flattened, sides marginate. Petiolar node, seen in profile on anterior side straight and perpendicular at base, then sloping to apex, with an acute angle between the two surfaces; posterior surface convex; from behind, evenly rounded above. Gaster ovate, short and thick. Legs long and slender.

Body nearly opaque, gaster subshining; antennae and legs sublucid.

Head, thorax, and abdomen finely, densely punctate and striolate, with abundant closely appressed pubescence, which gives the insect a velvety appearance. Body everywhere, except on funiculus, with numerous erect or suberect hairs.

Color dark ferruginous, legs lighter. Pile and pubescence gray. Camp 39 Madeira-Mamoré R. R.

This subspecies differs from typical *D. chartifex* in its more robust form, proportionately larger head and the opaque or semiopaque structure of the integument. In a series of *D. chartifex* from Bon Lugar on the Rio Purus (Coll. Goeldi, det. Forel) before me, the whole body is much more shining than in *D. mamoreënsis*, and the pubescence much more sparse. The head is proportionally smaller, and the occipital margin is distinctly, though narrowly, margined.

221. *Dendromyrmex madeirensis*, sp. nov.

Worker. Close to *D. apicalis.*

Head with sides in front of eyes evenly convex, considerably narrower at base of clypeus than in front of eyes; sides of occiput convex; occipital border narrowly, but distinctly margined; the sides, seen from above, angulate. Eye situated distinctly behind middle of head. Frontal area broad, convex, faintly longitudinally impressed at middle. Clypeus strongly carinate; the anterior border slightly concave; mandibles with six teeth. Antennae long and slender. Pronotum longer than broad, sides submarginate; strongly impressed and margined at anterior border. Surface, except for anterior depression, slightly convex. Mesonotum rounded above and at sides. Epinotum seen in profile, convex from apex to base; sides weakly margined, surface flat. Apex of node, seen in profile acutely angulate, from behind truncate, the sides near apical margin nearly straight, forming an angle with the apical margin. Gaster ovate. Legs long and slender.

Head shining, finely striolate and punctate, with rather sparse pubescence and abundant semierect pile. Scape of antennae shining, coarsely punctate, without pubescence, but with much long erect pile; funiculus thickly pubescent, with short pile. Pronotum shining, sparsely punctate, with sparse, long, recumbent and a few erect hairs. Mesonotum more densely punctate and more thickly pubescent than the pronotum. Epinotum and petiole semilucid, finely striate transversely, the former with very sparse pubescence and a few long, erect

hairs, the latter without pubescence, but with a few erect hairs. The first segment of gaster shining, minutely striolate, with very sparse appressed hairs and a few long ones. Rest of gaster more pubescent, and pilose, striolate, semishining. Legs shining, femora and tibiae pilose, tarsi with semiappressed pubescence.

Color black, except legs, which are dark reddish brown. Pile and pubescence gray.

Described from one worker taken at Abuná, Rio Madeira.

222. *Dendromyrmex apicalis*, sp. nov.

Plate 6, fig. 43.

Worker. Length 8.5 mm.

Head one and one fourth times as broad as thorax, with sides in front of eyes very slightly convex; behind eyes narrowed to near the base, then reflexed outward, forming a short, but distinct neck. Frontal laminae short and protruding. Clypeus longitudinally carinate. Mandibles thick, the blades with six acute teeth. Antennae long and slender, the scape extending a little past the pro-mesothoracic suture. Eyes hemispherical. Frontal area but little longer than broad; with a strong longitudinal impression. Eyes small, hemispherical, located only slightly behind and beneath middle of sides of head. Pronotum noticeably longer than broad; sides round, in front semimarginate; surface slightly convex posteriorly, flattened anteriorly, but not disciform. Mesothorax as broad as long, sides evenly rounded, seen in profile slightly convex, with faint depression at middle. Epinotum a little over three times as long as broad, sides slightly convex, evenly margined; in profile evenly convex from apex to base, surface flattened. The perpendicular anterior surface, and the slanting anterior surface of the petiolar node form an acute angle at the apex. Postpetiole with slight depression at middle; apex, seen from behind rounded. Gaster suboval. Legs long and slender.

Body, except gaster and legs, sublucid throughout, gaster shining. Head and thorax finely, transversely striolate, the striae more coarse on the epinotum and petiolar node, but extremely delicate on the gaster. Body finely punctate, each puncture with a short, recumbent hair.

Scape of antennae with a thin pubescence; funiculus with thicker

pubescence. The head, coxae, and gaster with a few long hairs, other parts of body without them.

Color black, apical four joints of antennae brown, tarsi brown.

Described from one worker taken at Madeira-Mamoré R. R. Camp 39.

The elongate pronotum which is only faintly depressed anteriorly, the shining black color throughout, the brown tarsi and tips of the antennae and the nearly entire absence of pilosity, distinguish *D. apicalis* from the other species of the genus. It approaches most closely *D. madeirensis* from the same region, but differs from this in the shape of the head, the rounded sides of pronotum, the structure of the petiolar node, and in the extremely sparse pubescence and pilosity.

223. *Dendromyrmex branneri*, sp. nov.

Plate 6, fig. 47.

Worker. Length 8 mm.

Head about one and one half times as long as broad, sides in front of eyes slightly convex, slightly broader at base of clypeus than in front of eyes, anterior corners angulate; occiput strongly contracted, seen from above with almost straight margin to a point a little over half the distance from eye to apex, then contracted into a narrow neck which is longer than broad, and has the posterior edge strongly reflexed. Clypeus slightly broader than long; sides straight, with a strong carina for entire length; anterior border truncate. Frontal area suboval in shape, with a longitudinal carina. Frontal laminae moderately elevated, approximating anteriorly. Mandibles rather slender, blade with five teeth. Antennae long and slender, scape extending a little beyond the mesoëpinotal impression, joints of flagellum subequal in length, all longer than broad, the anterior ones somewhat the thickest. Eye small, very convex, situated at posterior fourth of head. Thorax long and slender, the width contained four times in the length. Prothorax broadest at anterior third, constricted in front, sides evenly rounded; in profile very slightly convex. Promesonotal impression not deep. Mesonotum evenly rounded to near apex, where there is a strong transverse constriction; the sides from above strongly concave. Epinotum slightly over twice as long as broad, divided at anterior third by a broad transverse impression, which gives the profile the shape of a saddle; the declivity short,

with flattened surface, reflexed at base. Petiolar node thick; rounded above and at sides, a little broader than long; in profile rounded in front, nearly straight behind; the posteroventral surface of the petiole with a rounded projection. Ventral surface of mesothorax with an angulate tooth at anterior third. Gaster elongate oval, about two thirds as long as the thorax. Legs very long and slender.

Head sublucid, finely, densely, and evenly punctate. Thorax shining, minutely punctate. Epinotum finely striate, sublucid. Node sublucid, more coarsely striate transversely. Gaster shining, finely striolate.

Head without pubescence but with sparse, erect pile, antennae more coarsely pilose, funiculus pubescent, and with erect pile. Thorax, petiole, and node without pubescence, and but sparsely pilose. Gaster with scattered pubescence and sparse erect pile. Legs pilose, tibiae with a little pubescence.

Color dark ferruginous, the thorax lighter in color than the head or abdomen. Pile and pubescence white.

Described from several workers taken at Abuná. This is a very aberrant form, resembling at first sight one of the elongate American species of Dolichoderus. The long neck and the divided epinotum widely separate this species from those others which have been included in the genus Dendromyrmex.

Camponotus (*Dinomyrmex*) *agra* Smith has the occiput drawn out into a neck, and the head of the worker minor resembles that of *Dendromyrmex branneri*, but the thoracic structure is entirely different.

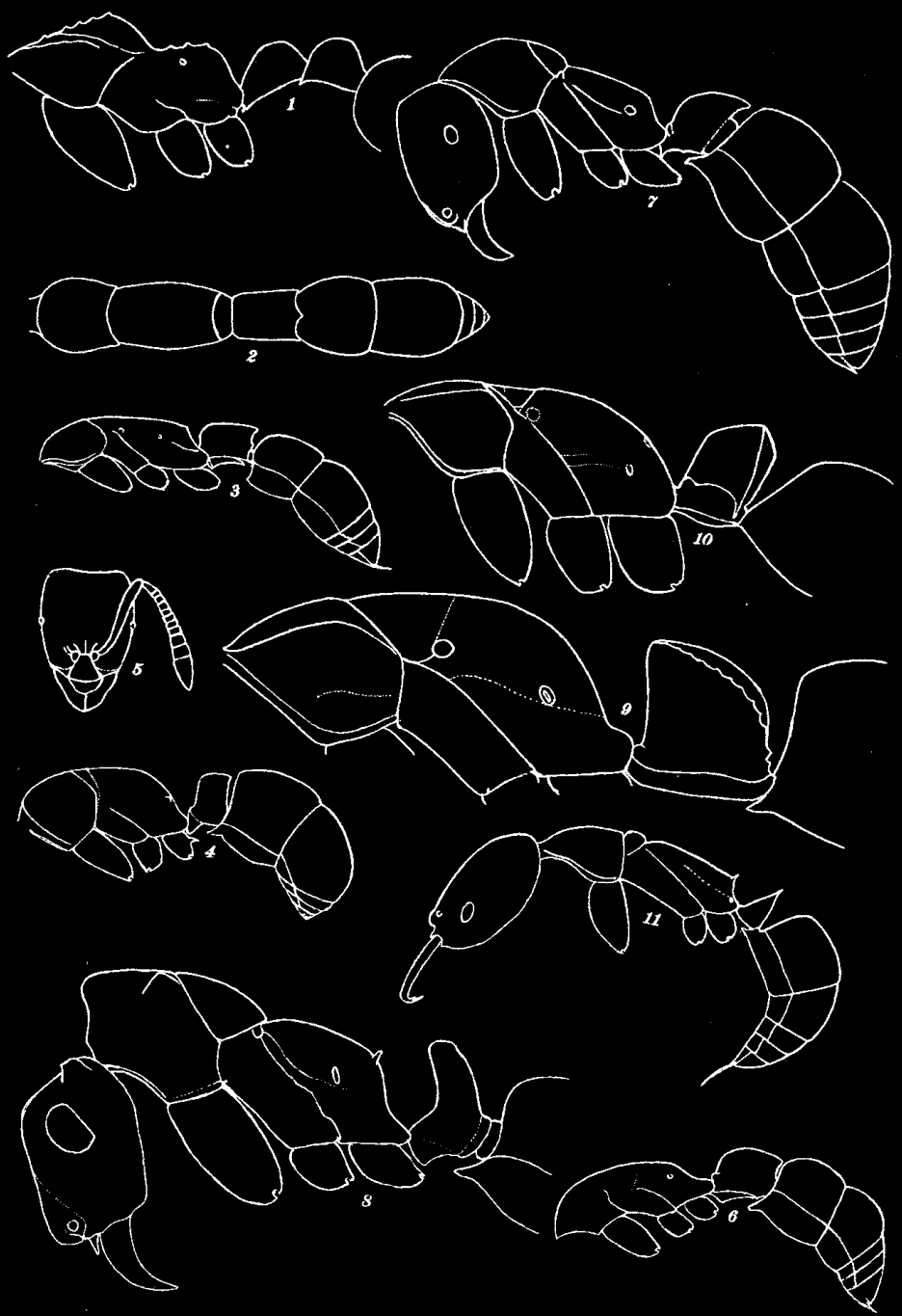
The following key will serve for the identification of the species of Dendromyrmex.

Form very long and slender; occiput drawn out into a narrow neck which is longer than broad; epinotum divided by broad transverse depressions into two portions (saddle-shaped in profile). *branneri* Mann

Form more robust; occiput not long; epinotum not divided....1

1. Thorax brown, or yellowish brown.....2
   Thorax black, or at least dark brown.....4
2. Gaster shining.....*chartifex* Smith
   Gaster opaque.....3
3. Head smaller; occiput faintly margined; color yellow. (British Guiana).....*chartifex* var. *felis* Mann
   Head larger; occiput not margined; color reddish. (Brazil) *chartifex* var. *mamoreënsis* Mann

4. More slender species; body black; thorax shining.....5
   More robust species partly brown; thorax subopaque.....6
5. With very sparse pile; tips of antennae brown; neck shorter; anterior border of clypeus convex.....*apicalis* Mann
   Abundantly pilose; tips of antennae black; neck longer. *madeirensis* Mann
6. Gaster shining.....7
   Gaster opaque.....8
7. Gaster black.....*traili* Mayr
   Gaster red.....*traili* var. *rufogaster* Mann
8. Gaster brown, with distinct punctation.....*nidulans* (Smith)
   Gaster black; punctation very fine.....*fabricii* Roger

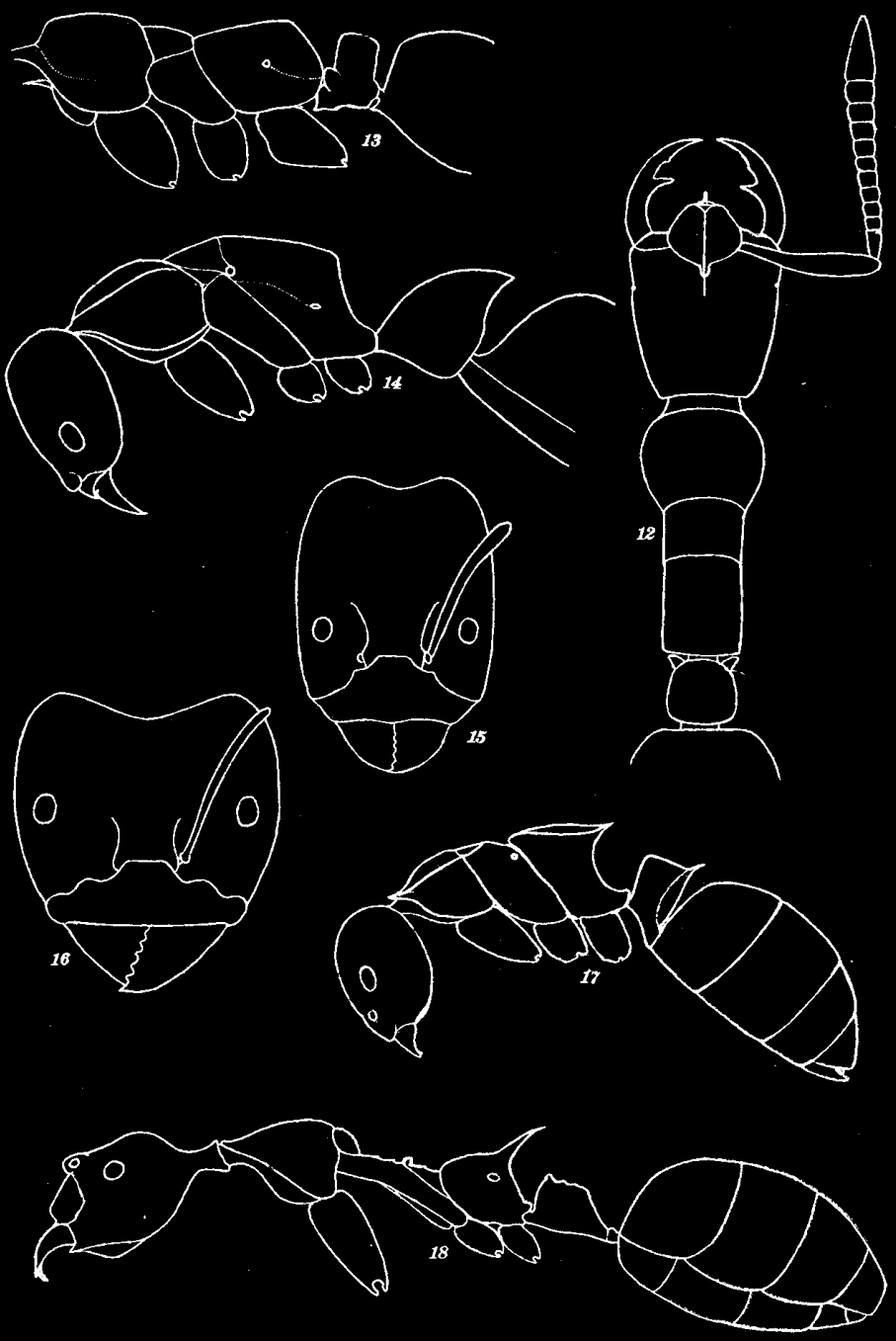


HELIOTYPE CO., BOSTON.

PLATE 1.

PLATE 1.

Fig. 1. Eciton (Acamatus) legionis F. Smith subsp. crenulatum Mann. Worker.
2. Platythyrea meinerti Forel. Worker. Dorsal view.
3. Platythyrea meinerti Forel. Lateral view.
4. Rhopalopone relicta Mann. Worker.
5. Head of same from front.
6. Ectatomma (Gnamptogenys) tortuolosum F. Smith. Worker.
7. Ectatomma (Gnamptogenys) concinnum (F. Smith). Worker.
8. Ectatomma (Ectatomma) confine Mayr. Worker.
9. Neoponera (Neoponera) bakeri Mann. Worker.
10. Neoponera (Neoponera) carinulata (Roger). Worker.
11. Anochetus (Anochetus) bispinosus (F. Smith). Worker.

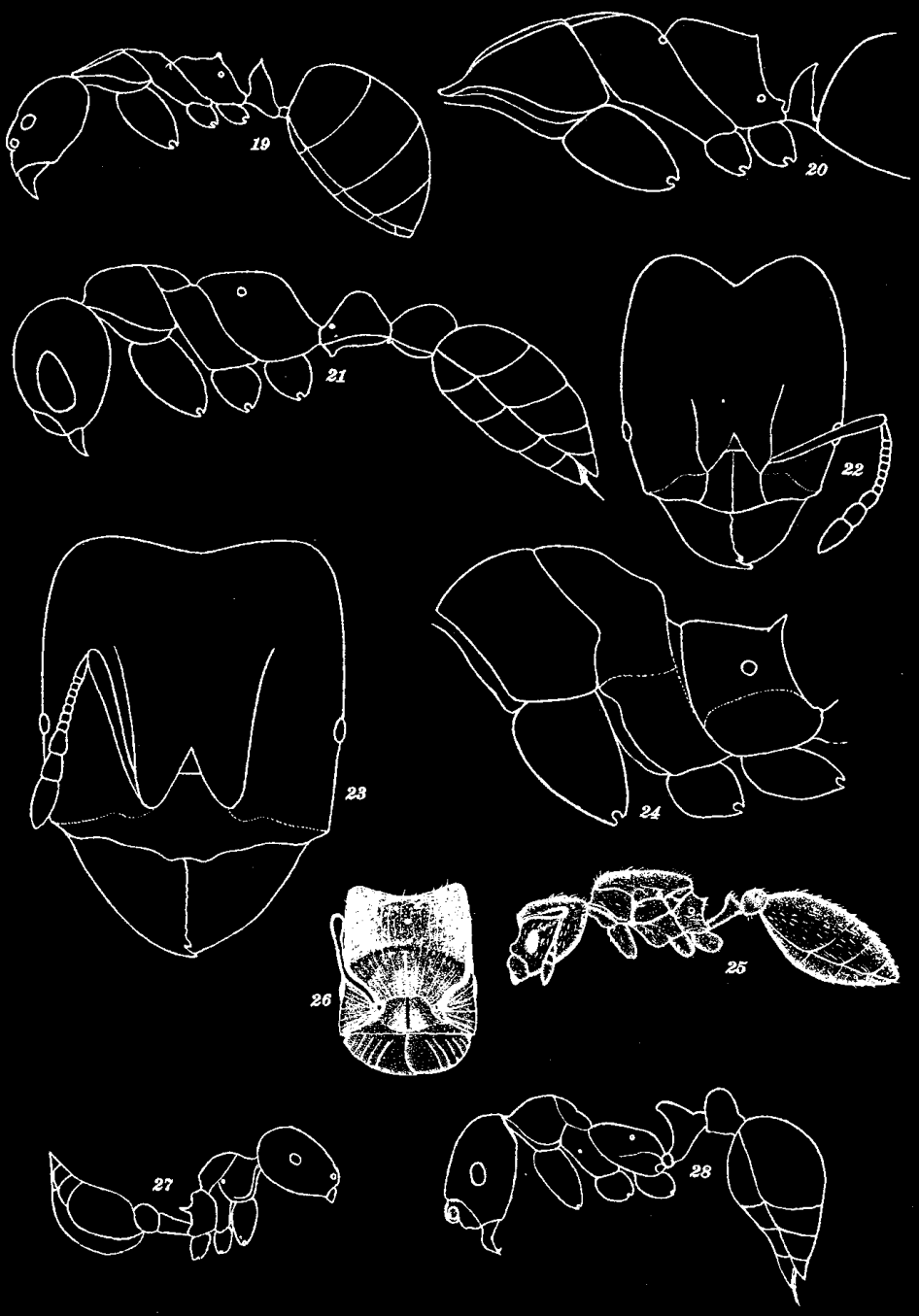


HELIOTYPE CO., BOSTON.

PLATE 2.

PLATE 2.

Fig. 12. Belonopelta jeckylli Mann. Worker. Dorsal view.
13. Belonopelta jeckylli Mann. Worker. Lateral view.
14. Neoponera (Neoponera) cavinodis Mann. Worker.
15. Azteca schumanni Emery subsp. dubia Mann. ♀.
16. Azteca mülleri Emery subsp. terminalis Mann. ♀.
17. Dolichoderus (Monacis) tristis Mann. ♀.
18. Dolichoderus (Dolichoderus) imbecillus Mann. ♀.

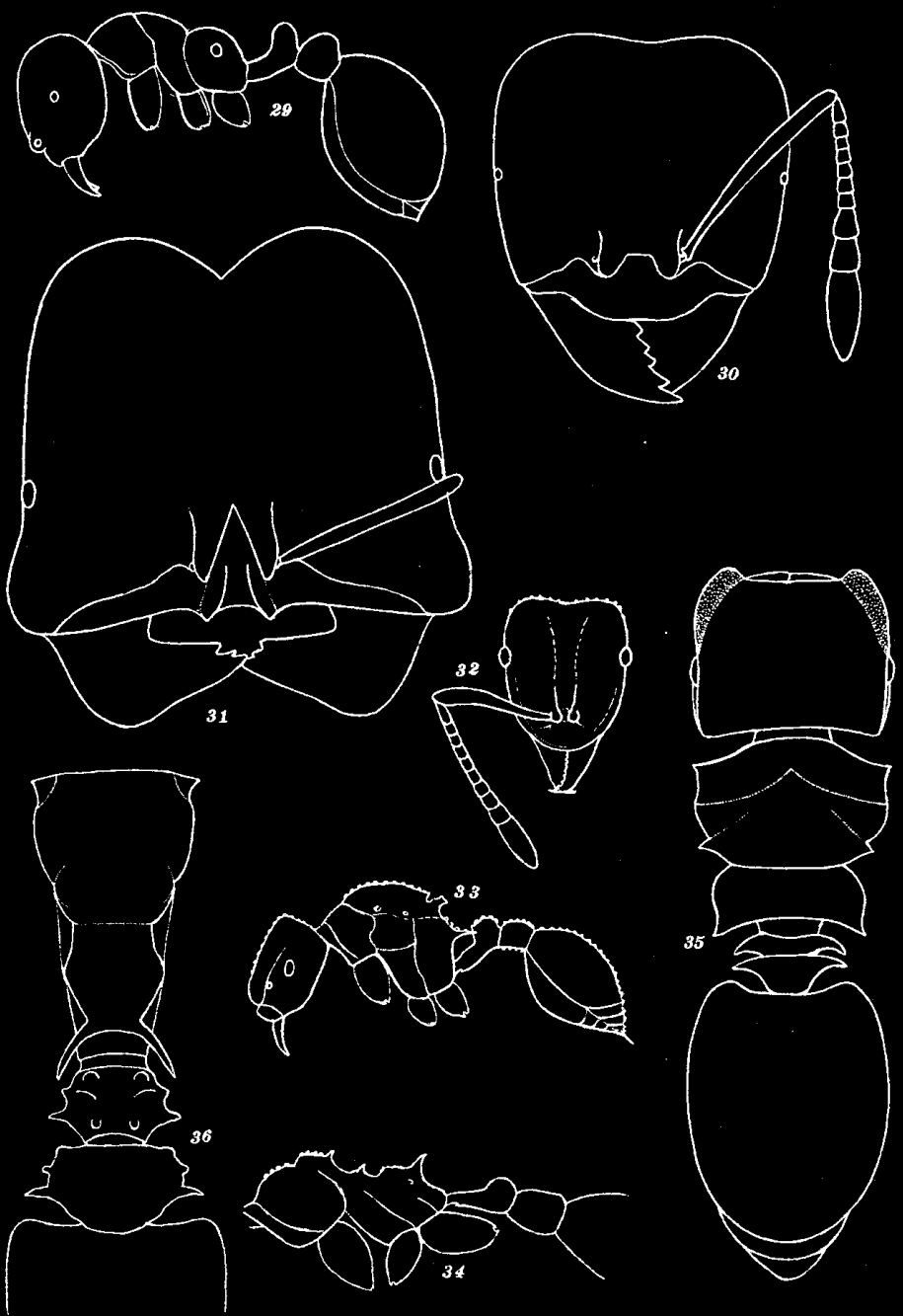


HELIOTYPE CO., BOSTON.

PLATE 3.

PLATE 3.

Fig. 19. Dolichoderus (Hypoclinea) ghiliani Emery. ♀.
20. Dolichoderus (Hypoclinea) lutosus F. Smith. ♀.
21. Pseudomyrma arboris-sanctae Emery. ♀.
22. Pheidole (Pheidole) carapuna Mann. Soldier.
23. Pheidole (Pheidole) wheeleri Mann. Soldier.
24. Pheidole (Pheidole) biconstricta Mayr subsp. burtoni Mann. Soldier.
25. Pheidole (Pheidole) colobopsis Mann. ♀.
26. Head of same from front.
27. Crematogaster (Crematogaster) heathi Mann. ♀.
28. Megalomyrmex wallacei Mann. ♀.

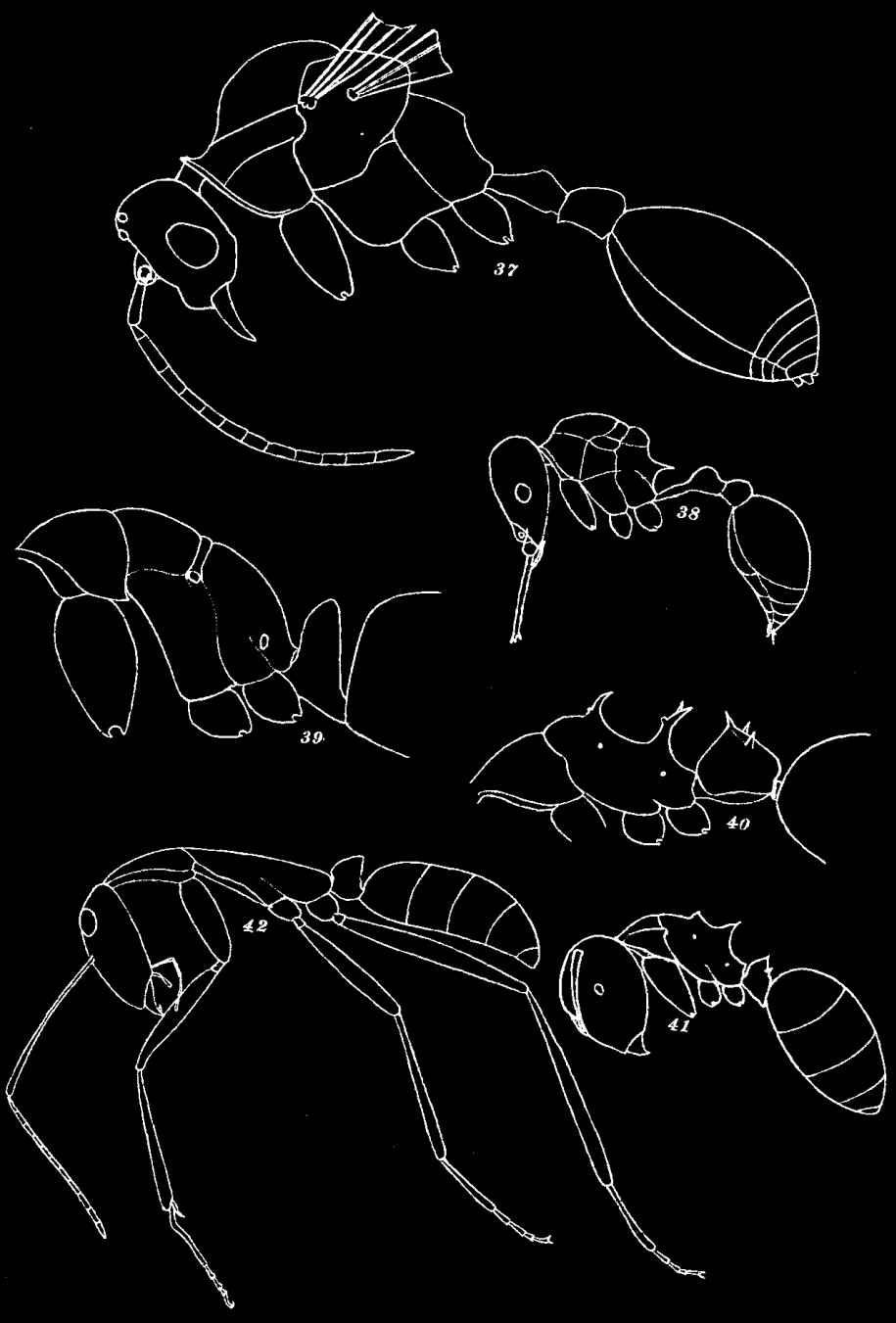


HELIOTYPE CO., BOSTON.

PLATE 4.

PLATE 4.

Fig. 29. Monomorium (Mitara) subterraneum Mann. ☿.
30. Head of same from front.
31. Solenopsis geminata (Fabr.) subsp. medusa Mann. Soldier.
32. Myrmicocrypta foreli Mann. ☿, head from front.
33. Myrmicocrypta foreli Mann. ♀.
34. Myrmicocrypta foreli Mann. ☿.
35. Cryptocerus (Cryptocerus) complanatus Guérin. Soldier.
36. Leptothorax (Goniothorax) echinatinodis Forel subsp. spininodis Mayr. ☿.

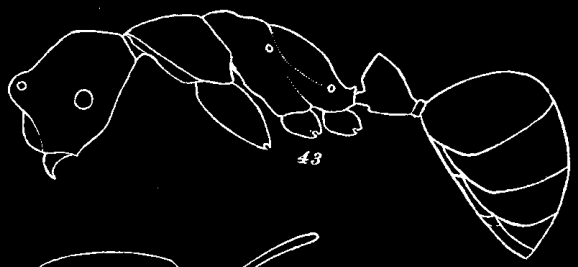


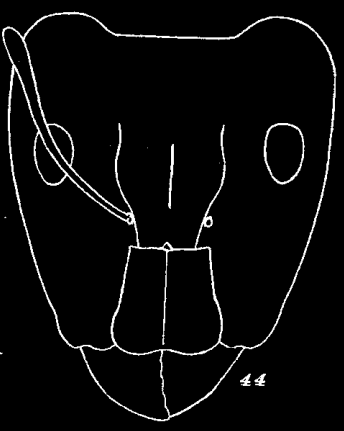
HELIOTYPE CO., BOSTON.

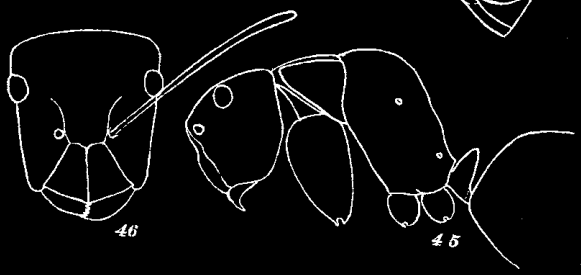
PLATE 5.

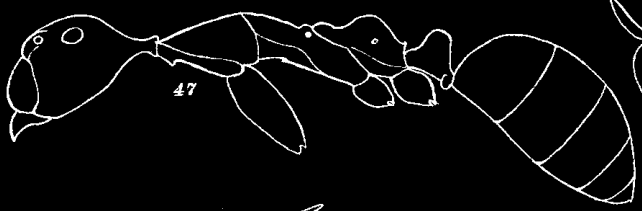
PLATE 5.

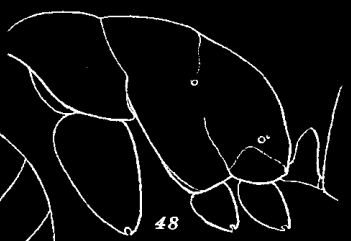
Fig. 37. Apterostigma branneri Mann. ♂.
38. Acanthognathus ocellatus Mayr. ♀.
39. Camponotus (Myrmothrix) rapax (Fabr.). ☿ major.
40. Camponotus (Myrmeurynota) heathi Mann. ☿ minor.
41. Camponotus (Myrmeurynota) heathi Mann. ☿ major.
42. Camponotus (Myrmomalis) depressus Mayr. ☿.

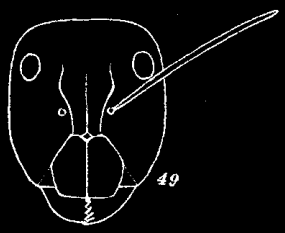


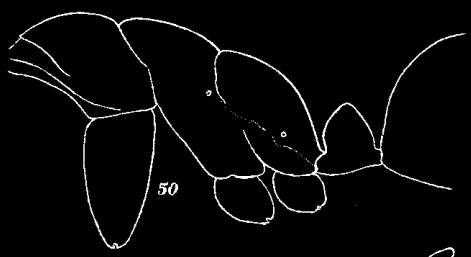


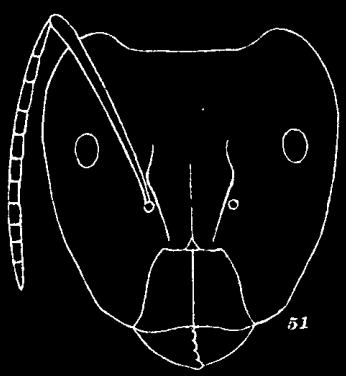


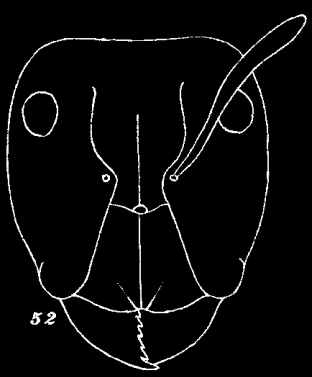












HELIOTYPE CO., BOSTON.

PLATE 6.

PLATE 6.

Fig. 43. Dendromyrmex apicalis Mann. Worker.
44. Camponotus (Myrmoturba) maculatus Fabr. var. abunanus Mann. Worker.
45. Camponotus (Myrmamblys) burtoni Mann. Worker major.
46. Camponotus (Myrmamblys) burtoni Mann. Head from front.
47. Dendromyrmex branneri Mann. Worker.
48. Camponotus (Myrmobrachys) adpressisetosus Forel. Worker major.
49. Camponotus (Myrmothrix) wheeleri Mann. Worker minor.
50. Camponotus (Myrmothrix) wheeleri Mann. Worker major.
51. Camponotus (Myrmothrix) wheeleri Mann. Worker minor.
52. Camponotus (Myrmoturba) maculatus Fabr. subsp. fryi Mann. Worker major.

Note. In the figures of *Camponotus* (*Myrmothrix*) *wheeleri* the points of insertion of the antennae are shown too far from the clypeus.

PLATE 7.

PLATE 7.

Fig. 53. Platythyrea meinerti Forel. Full-grown larva.
54. Ectatomma (Ectatomma) quadridens (Fabr.). Larva.
55. Dinoponera grandis Guérin subsp. mutica Emery. Immature (?) larva.
56. Pseudomyrma rufa F. Smith. Female (deälated).